The Builder.

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Taylor and Cresy's Rome.—New Edition.

ANY there are in the architectural profession of the present day, who will look with indifference, if with no more decided feeling, upon the present republication of the work* which, a little more than half a century ago, furnished to the architectural student of the day the most comprehensive and careful views and details of those architectural remains, the knowledge of which, both in their general proportions and in detail, was, said the authors in their original preface, "absolutely necessary to be known by all those who would practise their profession with the hope of reputation." How many are now practising the said profession with no little reputation of one sort or another, with, at any rate, a very fair share of success, not only without this definite and precise knowledge of Roman detail, but with a profound contempt for it, one cannot precisely estimate; but when, not very long since, the surviving representative of the joint authorship of the work read a paper at the Institute upon some of the more recent discoveries in Rome, there can be no doubt that he addressed an audience unanimous indeed in its personal respect and regard for an old fellow-labourer in the profession, but occupying many of them a very different stand in regard to the value or necessity to the modern architect of a detailed study of Roman remains. At the most, such a study would be to them only one of the means of making that acquaintance with all developments of architecture which should not be neglected; while to the authors of the book thus reproduced it was, as we have noticed, considered as the great *sine qud non* in professional study.

Had Mr. Taylor, whose long career came to a close not long after the occasion alluded to, survived for even another twelvemonth, he might, however, have been in the position of the man who, always keeping to one fashion in the cut of his coat, found himself, after many years of solitary eccentricity, suddenly in the fashion again one morning, through the old style having turned up again as the latest novelty. If we have not quite reached that, we have at any rate got to a late stage on the way. We have run the gauntlet of all the varieties of Gothic, and now the same school of architects who, a few years ago, would have piqued themselves on being Goths, and nothing else, are beginning to pique themselves on their artistic taste and insight in preferring to everything else the bastard style of the eighteenth century—the illegitimate offspring of bad Classic and debased Gothic. The taste is too indefinite in its object to have a very long or decisive reign; the progress from Gothic back again to the "refinements" of Classic is likely to go on its course, and Taylor and Cresy's fine work on the old Roman edifices has been reissued just in time, it would seem, to afford the necessary assistance to the young student, who will soon be again required, even in the most devoted and "earnest" offices, to get up his "orders," and to study the correct and artistic delineation of the acanthus-leaf.

So long has the work before us been out of print, and so little have the existing copies been referred to, probably, in recent schemes of architectural education, that to the present generation of readers it may almost claim to be reviewed as a new work, and have its scope and value afresh pointed out: at all events, some attention to it will suggest points not unworthy of consideration. The labours of Messrs. Taylor and Cresy were devoted in a great measure to the elucidation of the ornament and detail of the edifices of Rome, which had at that time been but little illustrated in works dealing with the subject, even in a more expensive and elaborate style. The volume contains the very useful adjunct of a plan of the portion of Rome in which the majority of the buildings mentioned are situated, showing at a glance their relative extent and positions in regard to each other, and to the modern lines of route of the Eternal City; an appendage still more valuable when the work was first issued, when travelling was a far greater and more serious undertaking than it is in these days. Even at present, however, this plan, in connexion with the views and detail drawings, may give to not a few of our younger students especially their first comprehensive idea as to the actual value and extent of the chief remains of ancient Roman buildings, and render such titles as the "Arch of Titus," the "Temple of Jupiter Stator," or of "Mars Ultor," more like realities and less like ambiguous names than before. A glance at the (restored) lines of the great collection of *fora* (*places*, in modern French phrase) which occupied the ground north-east of the Capitol, conveys a better idea than any histories, of the stateliness and architectural extent and spaciousness of Rome under the Empire. Of the buildings which these diligent English architects of the last generation undertook to measure and illustrate, at an expense which was probably never repaid by anything which the limited sale of a work of this class could produce, the principal are the Colosseum; the three arches of Titus, Severus, and Constantine; the Pantheon; and the temples (or, in most cases, fragments of temples), named of Jupiter Stator (now called the Dioscuri), Jupiter Tonans, Saturn, Mars Ultor, Antoninus and Faustina, and some others. The double temple of "Venus and Rome," so remarkable in its plan and massive scale of masonry, and of which Mr. Clarence Whaite gave so fine a view in a late exhibition of the Water-colour Society, appears in the general plan, but is not otherwise illustrated. Perhaps, after all, what is striking in this edifice is more for the artist than the architect. The whole of the buildings illustrated were completely drawn and measured with their own hands by the joint authors, who wisely trusted nothing to previously published measurements, and even surveyed the neighbourhood themselves to insure greater accuracy in the general plan. Such conscientious painstaking work as this, gone through from mere love of thoroughness and completeness, deserves recollection and recognition from this generation, both in credit to those who undertook it and as an example to those who would figure as their successors.

That peculiarly Roman feature, the triumphal arch, takes appropriately the first place among the illustrations; and it is not uninteresting to compare the five specimens of this class of design, in which architectural and ornamental art has full sway, untrammelled by practical necessities of any kind. The five alluded to include (in addition to the three we named above) the so-called "Arch of the Goldsmiths" in Rome, and that of Trajan at Ancona. As compared with its rivals, the Arch of Titus may be said to assert its right, in the eyes of the architect, to the fame which it has obtained as a salient specimen of Roman design; though no doubt some part of the popular interest in it arises from its connexion with a portion of sacred history. It is designed and put together with a more truly architectural spirit than its more rich-looking and showy compeer, the Arch of Constanstine. The disengaged columns in this latter, with the fluted pilasters in their rear, have a wonderfully rich and sumptuous effect, but they have no sufficient reason in the design, and are quite superabundant for the carrying of the comparatively small statues which occupy singly the platform above the capital of each column. In the Titus arch the engaged columns at the angles (restored from sufficient evidence,—the originals are gone long since) fill admirably the office of adding strength and substance to this point and removing the bareness of a sharp angle; and the inner half-columns complete the design and assist in carrying the cornice, without being obtrusive. These inner columns have afforded literary architects an opportunity of illustrating the story of the two sides of the shield; Serlio having affirmed them to have three-quarters projection, Desgodetz one-half: in fact, they, like the similar columns in the Trajan arch, are returned back a half-diameter on the side next the arch and considerably more on the side next the pier: in other words, the panel face of the pier is in the rear of the face of the arch. Probably the object of this arrangement was to give room for the angle column being brought well out from the masonry, yet without projecting beyond the line of the other column; the architect was thus enabled to place it with only about one-sixth of its surface "engaged." The fine and effective ornament of the soffit of the arch has been so often reproduced in modern work that one is apt to forget its ancient origin. The overloading of the members of the cornice, &c., with ornament, a common vice of Roman architecture, is not absent here; but, in fact, the Roman architect, with plenty of funds at his command, rarely knew where to stop in this respect. Another instance of this is afforded in the "Arch of the Goldsmiths," which, if the tradition of its building be the correct one, may be taken to have been a little outbreak of the pride of purse natural to a rich trade, who were determined to have their own private triumphal arch to do honour to the emperor (Septimius). If this be so, is it a curious coincidence, or really an evidence of trade taste, that this particular work, with its flat angle pilasters covered with enrichment, and its profusion of ornament elsewhere, should show so decidedly a character of design suggesting goldsmith's work? It certainly does so, and even reminds one, in feeling, of what has been called the *plateresque* style of Spain. In sculpture, as distinct from mere ornament, the Titus arch is the finest; for the bas-reliefs of Constantine, though more vivid and striking in action, do not attain their end nearly so well and artistically as the quiet processional groups of the Titus arch, and those of Septimius are much too scenic. As to the Goldsmiths' arch, the sculpture there is quite below par.

Every time one looks at a representation of the Pantheon, a fresh regret arises that an idea so noble and simple in itself should fail in effect so much as it does from deficiencies in carrying it out, or from being spoiled by subsequent mistreatment. Few things of the kind could be finer in effect than the portico; nothing more successful in the way of roofing has been done for a monumental building, whether we regard it externally or internally; but the bare masonry of the circular walls, with the ugly and appa-

* "The Architectural Antiquities of Rome; with one hundred and thirty Views and Measurements, taken in 1817, 1818, and 1819, by George Lidwell Taylor and Edward Cresy, Architects." A new edition, including the more recent discoveries, London: Lockwood & Co.

rently purposeless arches built in them, is a fatal eyesore in the exterior; and the disproportion between the ponderous coffered dome and the light and elegant order and attic which sustain it in the interior is always unsatisfactory. The details are many of them better than are generally recognised; at least, one does not hear much of them; the treatment of the architrave and frieze of the portico, with simple mouldings, is very forcible and good, and the cornice is not over-ornamented. On the other hand, some of the minor ornamental details, as the fluttering and be-ribboned festoon given by Taylor and Cresy, in plate 50, are in the worst and most vulgar taste. It cannot be supposed possible that the same architect who designed that solid and grandly-treated flat dome as a permanent roof to his building, also approved of or invented this frippery; but, in fact, the whole structure and composition of the building points to more than one, perhaps a variety of architects, and to changes at different periods of its existence; and, perhaps, there is no sturcture so generally written and spoken about and admired, of which the secret, so to speak, seems so difficult to get at.

Of the various temples figured in these volumes, there is not, as our readers are aware, one left intact, and of most of them but small remains exist. "Jupiter Stator" and "Jupiter Tonans" have their three columns apiece, balanced insecurely on blocks of masonry, the former trio held together by iron ties to aid them in retaining the perpendicular position. The temple of Vesta, at Rome, is in the best preservation, and has its circular colonnade complete, a fact which may be attributed chiefly to the intercolumniations having been fitted up with a wall, in which the columns have been preserved, and which is now removed, and the necessary fence provided by an iron railing. The cell of the temple, oddly enough, is much more ruined than the colonnade. It may, perhaps, be judged as a defect both in this and Tivoli temple, that a central cell, with a separate colonnade encircling it, should be roofed by a single span roof in one slope, from the central apex to the eaves over the colonnade: a Greek or Gothic architect would certainly have broken the roof-line so as to indicate the duality of the substructure. The Tivoli temple, much more ruined than the Roman one, owes much of its charm to its supremely beautiful and picturesque situation; the effect evidently captivated the authors, who have given several views of the temple in combination with the landscape around. Ordinary critics of "the picturesque" would say that in such a situation, on the brow of a steep rock overhanging a waterfall, a sterner and more massive piece of architecture would be more in place; however that may be, the temple seems to fill its position exactly, and to be the one thing wanting to make the landscape complete. The theory of the picturesque, if there is one, as respectable Sir Uvedale Price thought, is very hard to reduce to any fixed rule. Probably association enters into the matter a good deal more than we are aware of. Looking at the views of the remains of an edifice, the ordinary name at least of which is such a household word in architecture as the "Jupiter Stator" Temple, it is curiously suggestive of the unity and sameness of treatment in Classic architecture, that these three dilapidated columns, discreetly measured and restored, should suffice, almost as well as the whole building, for an "example," and should have exercised so wide an influence on a large school of modern architects, who have copied and reproduced the fine capital of this temple over and over again, thanks almost entirely to Messrs. Taylor and Cresy, who took the trouble of bringing back these worn and broken capitals to their pristine completeness, for the benefit of their profession generally. The want of scale in this architecture is another remarkable point. The views give a general notion of size by comparison with other objects; but in, for instance, the drawing of the remains of the grand temple of "Mars Ultor" (plate 72: one of the finest and most effective in the book), it is only by comparison with the figures on the scaffolding, and perhaps the details of the campanile behind, that any notion is gained of the scale of the four great columns with their entablature, which rise from amid the roofs of meaner structures. In this want of scale Classic architecture is curiously contrasted with Gothic, which nearly always tells the tale of its own dimensions, independently of any external datum. This same Temple of Mars, an earlier work than most of those given here (it was built under Augustus), shows more of Greek character, more simplicity and grandeur, than most of the later examples, after the less refined genius of the Roman had run riot, with his often ill-considered ornament, over the pure lines and surfaces of the Greek.

This Roman ornament in the mass, as largely and beautifully illustrated in the book we have been turning over, what is the ultimate verdict on it? Rich in general effect it is, undoubtedly, and with a power derived from its very redundance and exuberance; our admiration is in a manner forced for this prodigal expenditure of labour on every part of a structure which can be ornamented. And yet we cannot but feel that it is a vulgar source of effect, this, of over-elaboration and encrusting every possible surface with carving. Less work and more thought would have produced more effect in most cases, so far as the distribution of the ornament is concerned. And the ornament itself is too often what may be termed "loud," wanting in quiet and finish; and where it is imitative it imitates neither natural things nor natural principles, as the Greek does, but artificial things. The Greek either sculptured the human form, and did it magnificently, or he used ornament expressing abstract qualities of beauty and proportion. But the Roman grossly imitated made-up garlands and sacrificing instruments, and other tools of the temple trade. The frieze ornament from "Jupiter Tonans" (figured in plate 83) is a flagrant instance. The capitals are superior to the rest in this respect; but it is just in the capital that the Roman architect kept closest to the Greek. And the carved foliage of the other portions has mostly a bunchy, flabby character infinitely inferior to Greek and to the finest period of Gothic carving. It is emphatically the decorative taste of people with more wealth than culture.

It is like coming "back to our early days" to look over a book in which Vitruvius is quoted over and over again as the final authority. How many of the students in our offices at present have looked into their Vitruvius, or been told to do so? Would they like a specimen of what they are delivered from? It is amusing to shake one's chains sometimes, when they are once well off. "For a taste," as Touchstone says: the way to make a Classic doorway:—

> If the *Doric kind* is to be used, the height of the aperture being formed in the same manner as for the Doric, the breadth is determined by dividing the height into two and a half parts, of which one and a half part makes the breadth of the aperture at bottom. The contracture is the same as in the Doric. The thickness in the fronts of the antepagments is the fourteenth part of the height of the aperture: their cymatium is the sixth part of their thickness. The remainder, exclusive of the cymatium, is divided into twelve parts, three of which make the first corsa (the fascia) with its astrigal, four the second, and five the third. These corses, with their astrigals, extend all round. The hyperthrum is formed in the same manner as the Doric. The ancons or protyrides are wrought on the right and left, and, exclusive of the leaf, descend as low as the bottom of the supercilium. The thickness of these in front is the third part of the thickness of the antepagment; and at the bottom they are one-fourth thinner than at top. The doors are so framed that the cardinal scapi may be the twelfth part of the whole height of the aperture," &c., &c.

How do you like that, young Toe-Square?

The execution of the general views in Taylor and Cresy is in that old wood-engraving style, with a wavy line, and with very thick filling-in and shading, which looks heavy to eyes accustomed to the sparkle of modern engraving, but which has great merits of its own, and is really in a sense more artistic than the modern engraving, as it develops more the properties and handling peculiar to wood engraving, and in many portions of the plates is really worked according to what some acute critics have held to be the genuine method for wood-engraving, viz., cutting away for the lines and leaving black spaces, instead of sinking for the spaces and leaving the lines in relief. This, of course, involves a style of treatment where there are few white spaces, where the deep shadows are very strong, and the lights are given in line shading; but it is the true principle of wood-engraving, and might very well be resumed by able artists, at a saving of much mechanical labour now expended in producing pretty effects. Another thing suggested by the views in this work is,—the risk of trusting to perspective views and sketches in architectural representations. This is a very carefully got up book, yet the perspective views are some of them manifestly inaccurate, as compared with the geometrical drawings. Thus, in the remarks on the Arch of Constantine, attention is drawn to the unusual height of the pedestal, "more than a third of the *order*," which is correctly given in the geometrical drawing, but in the view the base is shown much lower,—scarcely more than a third of the *column*. In the general survey the stations from which the various views were taken are carefully marked, we presume by measurement. But a glance shows that some of the objects could not from those points appear as represented. Thus, in plate 79, the three columns of "Jupiter Tonans" are shown at about equidistant spaces on the paper, whereas, from the point marked on the survey the two northern columns must have covered one another. In the view of the Arch of Septimius (plate 11) these same columns are shown to the left of the arch; but from the point on the plan the arch must have hidden them. In plate 91 the three columns of Jupiter Stator, if taken from the point indicated, must have been nearly "end on" to the spectator; they are shown at an angle of 45° to him; they could not appear so and retain their position in relation to the buildings forming the background. If real accuracy is wanted in views, we should suggest that, nowadays at least, photographs should be taken, and drawings made or revised from them. It is singular, but we believe it is generally admitted that if a dozen competent people, with the best intentions, sketch the same group of buildings, no two of the sketches will be quite alike. We have known most odd discrepancies between practised sketchers, intending to give a genuine view of the same object.

A point in the second plate in this book is suggestive. It shows the west side of the Titus arch, supported on the south by a great buttress of masonry piled against and sloping outwards from it, to keep the arch in its place. There is a sort of grim lesson here on truth of construction. The Romans adopted the arch form without taking the trouble to find the true architectural expression for it. They kept the column when they should have found the buttress. And here, in one of their most famous works, the Gothic buttress has had to come to their aid at last to keep their arch from falling. There is a sort of moral in that, if one could apply it rightly.

We are very sorry our old friend did not live to see the re-issue of his valuable book.

ARCHÆOLOGISTS IN BRISTOL.

The Bristol Congress of the British Archæological Association, referred to in our last, has come to an end. It has proved most satisfactory to all concerned. Much good work has been done, and much real and hearty kindness enjoyed. A large number of antiquities have been seen, and good feeling towards them has been inculcated, a chief object of such gatherings. It is a good thing for a city like Bristol, busy in amassing money, and occupied with the material pursuits of to-day, to be taken back to the past, reminded of her history, and led to preserve those monuments of it and landmarks which exist.

We cannot attempt any continuous account of the whole proceedings; a mere list, which would interest no one, would occupy more space than we can devote to the subject. We must content ourselves with quotations from some few of the papers read, and a note or two here and there. The second day of meeting, Wednesday, the 5th inst., was devoted to a carriage excursion, including a number of churches and earthworks, some of the former little known, and lasted twelve hours. Nevertheless, there was a fair gathering to hear some of the papers read in the evening. During the excursion, after taking luncheon at the Lion, in Nailsea, Mr. J. W. Grover read an instructive and agreeable paper on

Roman and Saxon Earthworks.

Mr. Grover explained that in the most ancient works in Europe an earthen rampart was frequently found without a corresponding ditch, the material having been scraped together promiscuously. In the more advanced works ditches form the banks, and as times grew better or worse the number of banks and ditches multiplied. In a very advanced example, that of Maiden Castle, near Dorchester, seven banks and alternating fosses occur. He then went on to explain that it was a mistake to suppose that encampments could always be dated by their tracing, for many round and oval works were executed by the Romans, although the square form undoubtedly belonged to them especially. So, again, we found harp-shaped encampments amongst the oldest works, as well as amongst

those of the Danish invaders, to whom they were mostly ascribed. The earlier residences of the Anglo-Saxon chiefs consisted of timber buildings, surrounded by earthen ramparts. These were called "beorg," or "burgs," from the Saxon word meaning to defend; and generally they stood on the tops of high elevations. Our terminal "bury" is from this derivation, and such names as Cadbury, Abury, and Kingsbury show a Saxon occupation at least; but this does not necessarily imply a Saxon origin. The word "caer" in Welsh indicates a camp, as our word "Chester" does in English. From "Castrum," the Roman word, in Welsh, we have Caer-Went, Caer Leion, Caer Caradoc, from Castrum Ventæ, Castrum Legionis, Castrum Caradoc, &c. The adjunct "ham" is of Saxon derivation, and corresponds to the German word "heim." It signifies a village, and was probably surrounded by "weallas," or entrenchments. The syllable "din," "den," or "don,"—so very common,—was, he believed, of British origin. We have it universally, as London, Croydon, Clevedon, and, by following out the derivation of the names, some light was often shed on the era of a work. In the case of Cadbury it might be safely stated that it was a work which at one time formed the home of a Saxon chief; it was a "borough," or "bury." The prefix "cad" is probably from the Welsh "coed," and indicates a prior British origin, as he would explain. Mr. Grover then proceeded to describe the characteristics of Roman works, and the especial manner in which that race covered their gateways—by minor ramparts and traverses. He then exhibited a plan of Cadbury camp, which has an area of 7 a. 1 r. 28 p., with double ramparts varying from 16 ft. to 6 ft. high. He showed that 6,000 men could throw it up in twelve hours. It had, he thought, been executed by a race not earlier than the Roman period. He then proceeded to explain that the military and strategic lines of this district of country are parallel here to the Bristol Channel—one being the ridge of hills reaching from Weston, through Clevedon, Cadbury, Portbury, and Pill, to Blaize Castle, and along a trackway now known as Cribb's Causeway, to Knole Park, Thornbury, Titherington, &c. Along this line Mr. Grover gave particulars of a number of works. The other line of defence, more inland, but parallel to the last in this district, was to be seen at Bitton, Dyrham, Sodbury, Badminton, Horton, &c. On this line there were a considerable number of earthworks, to which Mr. Grover referred, especially drawing attention to the Sodbury Camp—a fine example of the work of the Legions, in true Polybian fashion. This country appears to have formed a sort of Torres Vedras for some primeval Wellesley whose name has been lost in the annals of time. After giving some description of the relative positions and arrangements of ancient city ramparts and those of camps so called, Mr. Grover went into some considerations respecting the period when this country district was such camping-ground, and from the reasons he gave it would appear that the position of the camps indicate the advance of a Roman army from S.E. to N.W., and a corresponding falling back on the Bristol Channel by the defenders. This would point to the campaign of Aulus Plautius, circa A.D. 43, wherein Titus and Vespasian distinguished themselves: the Britons being led by Caractacus and his brother Togodlimnus. Cadbury Camp would consequently date from this period, and be a British work, afterwards occupied by a Saxon chief. In its immediate district are no less than twenty encampments, attesting the value our ancestors and others placed on the freehold ground. Mr. Grover proceeded to comment on the different state of things here nowadays, and contrasted the long period occupied by the Roman and Saxon invaders in making good their holding to that of the Normans, who, in a single field, in one day, effected a permanent conquest, which has not been reversed for 800 years. He then proceeded to the question of the stockades and palisades, with which all ancient earthworks were surmounted, and showed by illustrations and illustrated diagrams from Trajan's Column and from passages in Cæsar, the various systems of fortification employed by barbarian races in the first century. They seem to have been very elaborate, and must have presented the appearance of a town in the Middle Ages, with their numerous towers and gateways, and the covered way, on the parapet, like that at Nuremberg now. There was an amount of art and scientific skill employed which, looking at the rough earthworks which remain, we should hardly give credit for now. The various systems of construction having been explained, Mr. Grover referred to a very interesting paper on the subject of Taunton Castle, by Mr. George T. Clark, of Dowlais, and to the subject of boundary dykes and the curious moats or artificial mounds which are to be found in this county within the earthworks, and often form the pedestal on which Norman keeps have arisen.

Inartistic Heraldry.

At the first evening meeting, Mr. J. R. Planché opened the ball with a paper on the "Seals of Bristol," in which he found himself unable to agree with Dallaway's romantic story. Mr. Planché said he could not conclude the paper without expressing his regret that such supporters and crests should have been assigned by any King-of-Arms to such a grand old coat of arms as that which had for six centuries distinguished the city of Bristol. No record of the date when, or the officer by whom they were granted, had yet been discovered; and he could not believe that the name of Camden was in any way associated with them. The visitation of 1623, in which they appear for the first and only time in our records, was made by his deputies, and must have been in existence at that period. The unicorns might have been assumed in honour of King James I., and, but for their unpicturesque attitude, might be accepted for that reason, though otherwise not in the least applicable to the city; but the crest was designed in the worst possible style of heraldic composition.

Mr. Edward Levien, M.A., hon. sec., then read a valuable paper on "The Early Religious Houses of Somersetshire," and the Rev. Prebendary Scarth followed with a paper on,—

The Roman Antiquities in the Mendip District.

He said that the range of hills of which he was about to treat, extending from the Bristol Channel to the confines of Wiltshire, a distance of about thirty-three miles, with a width varying from five to six miles, presented not only a variety of most beautiful scenery and interesting geological features, but also many remains of historical interest. These hills contained minerals, and along the Roman roads which ran along them were found the remains of ancient Roman villas and towns now extinct. Cremation appeared to have been general among the population of the Mendips; the barrows there did not present a single instance to the contrary. The barrows were either pre-Roman or the burial-places of others according to the Roman custom, and he mentioned some instances in proof of his assertion. The earthworks were numerous, and also the traces of early settlement, and the settlements were generally under the fortifications. They had been to one fortification, Cadbury, that day, and there was a second, which he described, near Yatton. The rev. gentlemen gave some interesting particulars in reference to the mineralogy of the Mendips, and said the mines of Somerset must have been of very early date. This was shown from the lead found on the northern slope near the line at Blagdon. At that place was found the earliest pig of lead yet discovered with the Roman stamp upon it. It had the inscription of Claudius, and the date was the year 49. It was presented to the British Museum. Another was found on the southern slope of the Mendips, and latterly one of the largest pigs ever found had been discovered at Charterhouse, with the Roman stamp upon it. The date was about 139.

Mr. Godwin, *apropos* of an observation made by the Prebendary, spoke of some vitrified forts they had seen in course of destruction during the day's excursion, and expressed a hope, notwithstanding the fate of Sir John Lubbock's Bill last session that another endeavour would be made to obtain State protection for the antiquities of the kingdom. He mentioned that in France, notwithstanding its present disjointed condition, a Commission had been just now issued with a view to obtain a complete registration of all the antiquities of the country.

Mr. Hodgson, M.P., the president, took up the same subject, and in a vigorous speech repeated the hope that had been expressed, and condemned the manner in which Sir John Lubbock's Bill had been met.

On Thursday one of the chief points was an examination of

Bristol Cathedral.

Here, after attending morning service, Mr. Gordon M. Hills delivered an address, and, conducting the members of the Association over the building, pointed out its many points of interest. Mr. Hills observed that upon the spot upon which they were then assembled the prayers and praise of the devout had gone up to Heaven for 750 years, and he was sure that it must have touched them all, as the service went on, to hear the saw and the hammer at work outside, evidencing as it did that by the piety and devotion of men now living there was being erected a building in which would be carried on the same devout feelings, and in which religion might be raised up, perhaps, for 750 years longer. By way of introduction, Mr. Hills proceeded to speak of the monastic world, or of the ecclesiastical world, as they might call it, which existed at the time the cathedral was founded. At that time the Benedictine order was almost the only order of monks known, the other great order which subsequently divided the monastic world with them, the Augustines, having then been little heard of; in truth, at the time that building was founded the Augustine order itself was not founded. They had, it was true, been spoken of for years before, even for centuries; but it was only some time after, a hundred years after the foundation of that monastery, that the Pope compelled all canons to submit to the Augustinian rule. The foundation of the church was laid by Robert Fitzharding about the year 1140, but the date varied a year or two, according to different authorities. It was said, and commonly received, that the church was opened for service in the year 1148, but he ventured to think that that date wanted a great deal of consideration before being accepted. Mr. Hills stated that he had visited Berkeley Castle, and by the permission of Lord Fitzhardinge had consulted the ancient documents of the monastery, and he quoted several circumstances which he had there discovered, and which had led him to doubt the authenticity of the date which was generally accepted as the date of consecration. The original building was of a simple character, and Norman throughout. Portions of it still remained; the south wall of the transept was principally of Norman date, and at the north end, too, were also remains of Norman work. The question had often arisen as to whether the church had ever been completed; whether, as well as a choir, it had a nave. That, he thought, could not be doubted, for outside there were the remains of the old nave. When the nave disappeared it was difficult to fix with any exactitude, but Abbot Newland told them that it began from 1136 to 1142. He referred to the interest always taken in the cathedral by the house of Berkeley, and said no one could possibly read the history of that cathedral without reading the history of the lords of Berkeley. After further dilating upon the early history of the church, Mr. Hills conducted his party to the east end, and directed their attention to the fine east window. An examination of some of the coats of arms led to the conclusion that the glass which filled the upper part was of the year 1320. Attention was also directed to the cresting on the top of the cornice over the altar, which was described as being very interesting and full of information, almost every alternate panel bearing the arms of some person, and there was evidence that the screen was erected in the time of Abbot Newland, and before 1512; and to the remarkable character of the recesses in the walls, in which were placed the effigies of past bishops. The stall work on either side of the choir was evidently the work of Abbot Elliot—1515 to 1526—for it bore his initials and his arms. The construction of the vaulting of the aisles was singular in its character, the roofing of the aisles being carried to the same height as that of the nave, which gave it an originality and loftiness of design, and stamped it as a piece of rare mechanical and mathematical skill. The chapter-house is a remarkably valuable specimen of Norman architecture.

A sumptuous luncheon, given by Mr. William Powell, the master, and the ancient Society of Merchant Venturers, in their hall, strengthened the visitors for further investigations in the city.

In the course of the excursion on Friday, a visit was paid to the little known ruins of

Keynsham Abbey.

Many local antiquaries, even, saw the ruins for the first time, and it is highly probable from what was then seen, and what transpired as to the character of the original building, that drawings will be made of some of the most interesting of the relics. Mr. G. R. Wright said the remains were discovered only about ten years ago. It was well known that the Abbey formerly stood upon or near the site, and the

ruins were brought to light in the excavations that were made for building some new villas. The first portion consisted of the lower part of a buttress, about 4 ft. high, and some fifteen or twenty yards of thick wall. The buttresses are finely carved, and contain numerous figures. About twenty yards farther on was a large piece of pavement of encaustic tiles, and when they were uncovered a stone slab was found among them, bearing an inscription, and dated the thirteenth century. There were also found on that spot portions of tabernacle work, which enclosed the shrine, and which were beautifully worked. This was shortly to be covered up, but he believed Mr. Irwin had made a plan of the Abbey. There was some account of it in the Bath Field Club proceedings, and Collinson, the antiquary, had given a long account of Keynsham. The property, it appeared, came into the possession of the Chandos family, and the Duke of Chandos had a house near the spot. The house was founded by William of Gloucester, one of the Black Canons, in the year 1170, the time of Henry II., and he was buried there.

Mr. Taylor said that William Earl of Gloucester and Joseph Earl of Pembroke were buried there. It was also said that the Duke of Buckingham mentioned by Shakspeare made an oblation at the shrine.

Mr. Philipps said that in London and York a great many Roman pavements had been taken up, and put together again at great labour and expense, for preservation. It occurred to him whether they could not, in Bristol, in connexion with the Museum or some other place, remove these and put them down, so as to make a floor. It could be done at comparatively little expense.

From Keynsham, the party proceeded by special train to Bath, where breaks were in waiting to convey them to the Manor-house, at Wraxall. Mr. Davis, of Bath, conducted the party over the place, which is a very fine specimen of a stone manor-house of the time of Edward IV., but great additions have been made by the ancient family of Longdown to the commencement of the last century. The house has a curious gateway, with a double entrance leading to rooms connected with a corridor opening into an inner court. The great points of interest, however, are the remains of the original hall, which still contains the ancient screen, and other objects of great interest. The lower parts of the hall, from the buttery to the pantry, are in their original state.

The Saxon Church at Bradford.

The party drove to Bradford-on-Avon, and visited the old church, where Prebendary Jones, vicar of the parish, pointed out all the objects of special interest. Mr. Jones then conducted the party to the Saxon Church, a building now attracting great attention in antiquarian circles, which we had the satisfaction of early recognising many years ago. Mr. Jones stated that until recently a great portion of the building was almost buried with dirt, and he had had it excavated. A factory had been built up against the nave end, and the chancel had been occupied as a cottage, a set of chimneys having been built through the chancel arch. Above the body of the nave, which is very circumscribed in its dimensions, was a room which had up to recently been used as a schoolroom. The ownership of the property had become divided, and when they wished to convey the school they had to treat with five different parties. They only signed the deed of agreement last week.

Some little personal discussion ensued here, concerning which a letter from Prebendary Jones will be found in another part of our present issue.

The Customs of London and Bristol.

Amongst other matters at the evening meeting in Bristol, on return, Mr. R. N. Philipps, F.S.A., gave a curious account of the great similarity which existed between the customs of the cities of London and Bristol. In the early charters strong reference was made to the freedom and liberty of the citizens. At the siege of Calais by Edward III., whilst London furnished twenty-five ships and 662 men, Bristol sent twenty-two ships and 608 men. The size of some of the Bristol ships was considerable, for in 1449 one of William Canynge's, called the *Mary and John*, was of 900 tons burthen. The election of mayor was similar in both cities from early times. Colston was as much at home in Whitechapel as in Bristol, and in 1709 he sent 20,000*l.* to help the starving poor of London. Canynge also united London and Bristol in his sympathies. He then noticed the way the salaries of the mayors of London and Bristol were obtained, the latter being from dues paid by each ship arriving in port, and the former by dues paid by each ship bringing corn into the port. There was a gallantry about Bristol, for 26*s.* for a muff for the mayoress was provided. The chamberlain of Bristol formerly possessed the same powers as that of London, and there used to be two sheriffs as in London. The coroner and aldermen were similiary appointed. He then referred to various interesting old customs that prevailed in both cities, causing amusement by enumeration of the curious punishments that were formerly meted out to offenders. The duties enjoined upon the mayors and corporations were very similar, especially in the measuring of coal sold, to see that the weight was correct, and if it was found short the punishment was that the sacks should be burnt, and part of the coal given to the poor. To this day that right continued in the Corporation of London. The legal powers of the authorities of the two cities were very similar. The reason of the similarity between the customs, no doubt, was that these two cities were the two great centres of commerce and of manufacture, and also the two great ports of the kingdom, celebrated in the world for their wealth and enterprise.

The visit to

Thornbury,

On Saturday, was a great success. Mr. Edward Roberts, who throughout has worked most assiduously and successfully, described the castle. The bearings over the gateway all belong to the family of Stafford and Northampton, the Stafford knot being especially conspicuous. The label on the left side of the arch has been broken off. There is room for a portcullis, but none was built, as when this structure was reared the day for fortifying private residences had passed away. Having entered the inner court, the attention of the company was called to the date, 1514, on the chimneys, as testifying to the fact that it evidently took the workmen three years to arrive at that point. The original style of the chimneys is seen in the stack on the north side; but after the commencement of the building a brick system of construction had become popular, and this exemplifies a more elaborate mode of workmanship than is seen in the rough stone of an older date. Pugin has made a mistake in calling the portion of the structure on the south side the great hall, as it seems most probable this hall was opposite the gateway, and had been now utterly destroyed. Some idea of its size may be gathered from the fact that, in 1510, the duke's guests and household numbered upwards of 450 persons. The party ascended to the summit of the tower, whence may be seen a magnificent expanse—the Monmouthshire side of the Severn and the Forest of Dean in one direction; the Cotswolds towards the north and north-east; at the south and south-east the well-wooded country about Wickwar, Rangeworthy, and Almondsbury. The apartments of the castle were also explored, and then Mr. Wright, having given a blast on his horn, a gathering took place in a corner of the private garden that commanded the most picturesque view of the castle which could be obtained. Some wooden steps served as a rostrum for Mr. Roberts, and he having mounted them, or, as one of the party remarked, taken steps to describe the place, many interesting particulars were given by him. He produced an enlarged plan copied from the one given by Pugin, which, however, was not complete, and did not give an idea of what the building was. Mr. Roberts said that now Mr. Howard, the owner, had given them permission to see the castle, he hoped to be able to furnish such a plan as would illustrate what the buildings were in their entirety. Leland's account of Thornbury was quoted by Mr. Roberts, and the chronicler did not give the inhabitants the most flattering character. He said that the town nearly approached the shape of the letter Y, having first one long street, and then two horns growing out of it. Idleness much reigned there; but, as it appeared the duke encroached on the rights of the people by continual enclosures, it is not to be wondered that they lost heart, and dealt out those curses that Leland more than once refers to.

The short distance between the castle and the church was next accomplished; and when all had wandered about the interior, Mr. Roberts called attention to certain matters of interest. He said the sacred structure had been restored about thirty years ago; and this task appeared to have been very carefully done, so that the building was not, as in too many cases, destroyed archæologically. Before the present edifice there existed a Norman church; but, except the wall of the north aisle and the north door, he could not point to any part which showed that origin; though the north door was certainly of the late part of the eleventh century or the very beginning of the twelfth. The south door showed a later period, and that had been most carefully restored, and showed the mouldings of the thirteenth century. The church consisted of a rather large and wide nave, aisles, chancel, and two chantries. The stone pulpit had been accurately restored, and stone pulpits seemed to abound in this part of the country. Leaving the interior, the party walked round the exterior, and Mr. Roberts observed of the tower that it was very much like the Somersetshire towers they had seen, and the magnificent parapet was about 16 ft. high. Of similar parapets there were only three instances known in this part of the country, and he supposed they were most of them acquainted with the legend concerning these. Thornbury, St. Stephen's, Bristol, and Dundry were the three churches; and when the builder of them had finished Dundry, he boasted that he had "done dree." The old joke raised a laugh, as many new ones had done before.

At the evening meeting some account was given of various

Unpublished Historical Documents in Bristol.

Mr. W. De Gray Birch, after remarking that his observations would relate to several ancient and hitherto unpublished documents which had been liberally put before him by the gentlemen who were so fortunate as to possess them, explained what was meant by palæography, which was a science that dealt chiefly with the handwriting of ancient documents. A great change had taken place in it. The old science was very uncertain and unstable, but the new palæographic school strove to be more careful and precise. The father of that new school was Sylvester, whose works were edited by Sir Frederick Madden, who might be justly considered the father of palæography. The science they originated, as might be said, was now being intensified, and within the last eighteen months the Palæographic Society had been formed, for the publication, by means of photography, of ancient deeds, &c., and it had excited great interest among literary men. The reader then went on to observe that he would on that occasion refer to a small collection of ancient charters in the possession of the Clifton Library, the authorities of which had very kindly lent them that evening to the Congress. The first was a charter of the early part of the twelfth century; it was a grant by William Earl of Gloucester to the church of St. James, in Bristol, giving them his body to be buried in that church, and also granting them a share of the receipts from a certain mill situated in Gloucestershire. Another very interesting deed was one from Simon Sampson, Bishop of Worcester in 1097, and connected with the Abbey of Tewkesbury, which was very large and powerful, and had jurisdiction over St. Peter's, at Bristol. This was a grant giving to St. Peter's certain possessions about the neighbourhood. In his examination of these documents he had found a large number of names of people connected with religious houses in Bristol who had up to the present time been unknown to history, and also some very curious details connected with them, including licences from the corporation of Bristol to the priory of Witham. Mr. Birch particularised several of these, pointing out that the existence, about the year 1360, of a monastic house on the bridge over the Avon was proved conclusively by these documents. From them also might be gathered a large list of constables of the castle; for, in his cursory inspection he had met with the names of several, and sometimes the constable was mentioned before the mayor of the city, showing that the former was a very important officer indeed. The name of Worcester also occurred very frequently in these charters, which, he thought, were of very great, and almost absorbing, interest to the inhabitants of this city; and he would recommend all those who wished to know anything of the history of their native place to pay a visit to the library where they were deposited, and he was sure Mr. Taylor would do all he could to assist them. That gentleman deserved very great credit for

the way in which he had taken care of the documents. He next referred to some books which had been kindly placed before them by the authorities of St. Mary Redcliff Church. They were three manuscripts relating to the parish, which had been rescued from their impending fate of destruction chiefly by the care of Mr. S. V. Hare, who had very properly had them bound by perhaps the only man in England who could bind manuscripts as they ought to be. After describing the contents of the first book, which was one of accounts, the reader said that in one place was mentioned the price of the book itself, namely twenty pence, showing the value of paper at the time. There were also in it pages of scribbling in the handwriting of the unfortunate Chatterton. The other day they were shown his room, and many other places associated with his memory, and here they had the actual autograph of his hand, which was imitations of the old handwriting of the book. Those imitations appeared to him to foreshadow the wondrous forgeries which took all people by surprise, and for a long time puzzled the learned and literary of the day. They were imitations of a poor kind of writing, and words of Latin written over and over again, as if he was endeavouring to imitate a copy,—as if a schoolboy was trying to imitate what he did not understand. The next book included memoranda relating to the same church, and contained what was probably a list of tenants of Canynge's property, as well as an inventory of the church property. The third book also related to Canynge, in 1458. That collection of books was of the very greatest interest, and the reader expressed a wish that other gentlemen would follow the example which had been set them by Mr. Hare, in preserving things relating to ancient local affairs. Mr. Birch here exhibited to the Congress Chatterton's pocket-book,—the actual pocket-book, he said, which Chatterton possessed, which contained scribblings and notes such as were in the manuscript before described, and which was found in the room in which he died. They would notice upon it the stain from the bottle that held the poison by which he destroyed himself, and the potency of the draught was pretty well indicated by the hole it had burnt in the book itself. That book was undoubtedly one of the most valuable literary relics connected with Bristol, and they were indebted to Mr. Hare for securing it, and not allowing it to pass out of the city.

Early History of Bristol.

Mr. John Taylor, librarian of the Bristol Museum and Library, read a paper on the "Earliest Appearances of Bristol in History." With respect to the Roman occupation of the spot, he admitted that the materials of his evidence were somewhat scanty. Though Caer Brito, one of the twenty-eight Roman cities, was interpretated by Henry of Huntingdon (A.D. 1154) to mean Bristol, few tangible relics of Roman settlement had been found. Coins of various Roman emperors had been dug up on Kingsdown and on St. Michael's-hill, in Bell-lane, Broad-street, and recently on the site of the new nave of the cathedral. A pig of lead with a Roman inscription had been found in the bed of the Frome, Wade-street. Except for the evidence supplied by these facts, the argument for the Roman foundation of Bristol seemed to be wanting in support, and he did not, therefore, strongly contend for so early an origin. His object at this point of his subject was rather to show that 1051 A.D., assigned by Mr. Freeman as the earliest year Bristol was to be found in history, is later than is required by existing *data* for the beginning of the place. The numerous Bristol coins extant of Danish mintage were alone sufficient to indicate here a centre of population in the time of the Danes. Mr. Ruding, the eminent numismatologist, states that there are four or five varieties of a penny of Canute. Harold I. and Hurthcunt, sons of Canute, likewise had mints at Bristol, as had also Edward the Confessor and Harold II. The type of the obverse of one of Harold II.'s Bristol coins was copied by William the Conqueror. In speaking of the Danish invasion, Mr. Worrel remarks that in southern England the repulsed Anglo-Saxons concentrated the remnants of their strength. A great number of influential Danes were, indeed, also settled here, either in the country or, with a view to commerce, in the principal towns on the coast, such as Winchester, Exeter, and Bristol. But out of London the Danes scarcely formed at that time any really strong and united power in the south of England. The predominating people were the Anglo-Saxons, and in general the old Saxon characteristics had been preserved. If the authority of Polydore Vergil (A.D. 1525) is to be accepted, Edmund Ironside, being proclaimed king by the citizens of London in A.D. 1016, advanced against the Danes settled in the West, and, assaulting Gloucester and Bristol, then held by them, forced those who were left in garrison to come forth to hand-strokes, slew many, and brought the rest to submission and "to plight pledges of their faith." The evidence derived from the ancient romance of "Merlin" will not perhaps be received as history, but the story in so early a poem (A.D. 1230) of the Danes landing at Bristol shows some tradition of fact, or at least indicates the importance of the place at the time when the elements of the romance were being crystallised into their ultimate forms, if not when they were held in solution. The incident as therein related (which has not hitherto been quoted) is to the effect that in Denmark were two stalwart Sarazens (Saxons) of King Hengist's kindred, one being the son of Hengist's brother, and the other of his sister. These heroes were respectively named Sir Gamor and Sir Malador. They were great lords in their own land, one holding two duchies and the other three. When they heard how Hengist was slain in England, they gathered a numerous host to avenge his destruction. A great battle was fought, in which 3,031 Christian men were slain, and of the Saracens only five escaped alive. On the whole, we may safely conclude that Bristol was demonstrably a habitation and a name before A.D. 1051. Bristol Castle is not mentioned in Domesday Book, but appears first in history in connexion with Geoffrey, Bishop of Coutance. Like some feudal tower such as he himself might have erected, that has outlasted town and village, and still stands a conspicuous object in the landscape, the figure of this haughty baron-priest lifts his head in the historic page above the level of the invading host who came over with the Conqueror. He was nephew to Tancred, the hero of Tasso's classic romance. We find him at Bristol in the year 1088, in company with Robert Mowbray "the peace-breaker," his nephew, a huge dark-complexioned, harsh, proud, and melancholy man, who rarely smiled when speaking. These had combined with Odo, Bishop of Bayeux, against William Rufus, in favour of Robert, Earl of Normandy. The plot was concerted during Lent, and when Easter came they marched forth and plundered and burnt the lands of the Crown, and harried the estates of those who stood loyal to the king.

On Monday the members left Bristol at 9.30 a.m., for Worle station, and on alighting proceeded direct to Woodspring Priory—the main objects of interest connected with which were ably pointed out by Mr. T. Blashill, the fine mouldings of the tower especially attracting notice. On arriving at St. Kew's Steps, at Kewstoke, the Rev. Prebendary Scarth took the lead as a guide, and gave a most interesting description of the surroundings. On attaining the summit and passing through the various enclosures which, as explained, were formerly used for protecting cattle in times of siege, the explorers came to the stronghold of the camp, after passing seven distinct ramparts. The thickness of the wall, which was said to have ranged from 10 ft. to 100 ft., having been pointed out—some of which still remains, whilst other portions have fallen over and become mere ruins,—the platforms used by the slingers for the protection of the camp next attracted the observation of the explorers; and, in verification of the assumption of the use for which such platforms were employed, there still remains a quantity of round stones that had evidently been provided as the ammunition of the then defenders of this part of the coast. The pit dwellings of the ancient inhabitants of Worlebury Hill were next inspected: in one three skeletons had been found. Prebendary Scarth expressed a hope that in the progress of building in Weston-super-Mare the ancient remains in the immediate neighbourhood should not share a similar fate to those on the other side of the Avon, old ramparts and objects of interest to the antiquary being there levelled to the ground to form approaches to modern investments and speculations. Upon the return of the archæologists to Bristol they were entertained at dinner by the Mayor.

We must omit many things said and done, and hasten on to the end. At the closing evening meeting,

The High Sheriff, Mr. T. T. Walton, proposed a vote to the distinguished visitors, which was ably seconded at some length by a Hindoo gentleman from Madras, who had sedulously attended all the meetings. Mr. G. M. Mills responded, and in earnest words, thanked the Mayor and officers of the Corporation, the Master and Society of the Merchant Venturers, the indefatigable local secretary, Mr. Reynolds, the gentleman who had helped them by opening the Museum and Commercial-rooms, as well as those who had contributed so largely to the *éclat* of the meetings by reading papers, and by other help. Mr. Roberts read a letter relating to the amalgamation of the Society with the Institute, and expressed his opinion that there was work enough and room enough for the two, and that the President should be requested to express that as the opinion of the meeting to the President of the sister Society.

We cannot quite coincide in this opinion, and hope that the proposition will be quietly considered by the Council when they meet in London. The time for union seems to us to have arrived.

TEMPLE BAR.

The last survivor of the City bars and gates cannot long remain in its present condition as an obstruction in the midst of the most congested thoroughfare in London, and soon Temple Bar must be added to the list of old structures which have been swept away. The question of its destruction has been continually cropping up for many years past, and now it appears that the structure itself has settled the question, for the cracks that have lately shown themselves, and are due to the subsidence of the foundation caused by the extensive clearance for the New Law Courts cannot be overlooked, and the timber supports that have been set up during the last few days can only be considered as temporary expedients to prevent it from tumbling down with dangerous precipitancy. In March, 1868, the Bar was reported to be in an unsafe condition, and sixteen years previously a proposal to renovate it was defeated in the Common Council, and a counter proposal to remove it altogether gained considerable support. There are several interesting associations connected with Temple Bar, so that every one must feel some little regret at its disappearance; but if the destruction of this last external mark of the distinction between the City and the West End helps on the long-required consolidation of the metropolis as a whole all London will be gainers. It has been proposed to remove the stones and to rebuild them in some other position, but this would be a proceeding of doubtful utility, because the structure is not beautiful, and the interest connected with it, such as it is, depends entirely upon its original situation. Transplanted relics are not usually much respected, unless they are peculiarly fitted for their new positions.

The present building we know to be two hundred years old, but we have no record of the time when a bar was first placed here to divide the town from the shire, or the freedom of the City of London from the Liberty of the City of Westminster. For many years there were only posts, rails, and a chain across the road, but in course of time a timber structure was erected, which according to old views was rather handsome in its appearance. It had three arches, and was decorated with Corinthian columns and coats of arms. This was taken down after the Great Fire, not however before Inigo Jones had designed a triumphal arch, and Sir Balthazar Gerbier a handsome gate to supersede it. The present Bar was ordered by Charles II., who promised money to carry on the works, but did not fulfil his promise. It was erected from the designs of Sir Christopher Wren, in the years 1670, 1671, and 1672 during the mayoralties of Sir Samuel Starling, Sir Richard Ford, and Sir George Waterman. The four statues, viz., Queen Elizabeth and James I. on the east side, and Charles I. and Charles II. on the west side, are all by John Bushnell, a well-known sculptor of his day, who received 480*l.* for them. The figure of the Queen has been supposed by some to be intended for Anne of Denmark, but the features are so weather-worn that it would be impossible to decide the question by the present appearance. The total cost of the building, including the money paid to Bushnell, was 1,397*l.* 10*s.*

One of the earliest notices of Temple Bar is in an Ordinance of Edward III. (1,353) for a tax to repair the highway between Temple Bar and the gate of the Abbey at Westminster, and since

then many historical occurrences have successively taken place by the old posts and rails, and under the wooden archway, and Wren's Portland stone building. The Bar has taken its part in most national rejoicings and sorrowings. It has been gorgeously decorated for coronations and royal weddings and dressed with sable hangings for state funerals. We have every reason for believing that this barrier existed when the body of the popular Queen Eleanor, followed by her sorrowing husband (Edward I.), was borne amid universal mourning to Westminster Abbey. Most of our sovereigns and their consorts have at some period of their reigns passed this way in state. One of the earliest instances on record of the decoration of the old Bar occurred at the coronation of Edward VI., when fourteen flags floated from its roof, and it was newly painted with battlements and buttresses and hung with arras. The ceremony of closing the gates against the sovereign, and the delivery of the sword by the Lord Mayor, can be traced back to a considerable antiquity. Stow gives the following account in his "Annales" of the procession of Queen Elizabeth to St. Paul's when she went to return thanks for the defeat of the Spanish Armada:—"Over the gate of the Temple Bar were placed the waites of the citie, and at the same Bar the Lord Mayor and his brethren the aldermen in scarlet, received and welcomed her Majesty to her City and Chamber, delivering to her hande the sceptre [sword], which, after certain speeches had been made, her Highness redelivered to the Mayor, and he again taking his horse bare the same before her." Cromwell dined in state in the City in 1649 when the Mayor delivered up the sword to the Speaker "as he used to do the King." Queen Anne passed through Temple Bar on her way to St. Paul's to give thanks for Marlborough's victories, as did George III. when he gave thanks after his recovery from the worst of all diseases,—that of the mind. Queen Victoria has frequently given the citizens an opportunity of shutting their gates, for upon no other occasion than a royal visit are they closed. The Bar has been hung with mourning black for the funerals of Nelson and Wellington, and has been made gay with brilliant hangings at the rejoicings after the marriages of the Prince and Princess of Wales and of the Duke and Duchess of Edinburgh. It has, in fact, not yet lost entirely the holiday brightness that was given to it on the occasion of the Thanksgiving for the Prince of Wales's recovery. The stone is not black, and the gates are not so grimed with dirt as they used to be.

It was a favourite practice of our forefathers to set up the heads of rebels in some public place "to encourage the others," and Old London Bridge was at one time the favoured spot for this exhibition. Here the heads of Wallace, Jack Cade, Sir Thomas More, and Bishop Fisher of Rochester were placed, and in the year 1598 Hentzner counted above thirty heads upon the gatehouses of the bridge. After the Restoration the heads of some of the regicides and of Vennor, the Fifth-Monarchy man, were exhibited here; but soon after the erection of the new Temple Bar this gate obtained the distinction of becoming the "City Golgotha," and the ghastly sight of human heads rotting in the sun was witnessed by Londoners with much unconcern for a century. In Dodsley's "London and its Environs," 1761, there is a plate of the Bar, with three heads on pikes rising from the roof; and we read, "since the erection of this gate it has been particularly distinguished by having the heads of such as have been executed for high treason placed upon it." The first head set up was that of Sir Thomas Armstrong, who was hanged for complicity in the Rye House Plot, in 1683; but it is reported that Henry VIII. once threatened that if a certain Bill in which he took interest did not pass the House of Commons he would fix the heads of several of the refractory M.P.s upon the top of Temple Bar. The next victims of judicial cruelty whose mangled remains were exhibited here were Jacobites, who were found guilty of an attempt to assassinate William III. Sir John Friend and Sir William Perkins were drawn in a sledge from Newgate to Tyburn, on the 3rd of April, 1796, where they were hanged and quartered. The quarters of Sir William Perkins and Sir John Friend were placed, together with the head of the former, upon Temple Bar. Friend's head was set up on Aldgate, on account, it is supposed, of that gate being nearer his brewery on Tower-hill. Evelyn refers to the horrible scene in his "Diary:—"A dismal sight, which many pitied. I think there never was such a Temple Bar till now, except once, in time of King Charles II., viz., Sir Thomas Armstrong." The Jacobite risings in 1715 were the cause of two more heads,—those of Joseph Sullivan and Colonel Henry Oxburg,—being placed above the bar. Eight years afterwards the head of Christopher Layer, a young barrister, who plotted for the Pretender, was placed there too, and in that position it remained for upwards of thirty years, when at last, on a stormy night, it was blown down into the Strand. "The rising of '45," which was crushed out at Culloden, brought many brave men to the scaffold, but only Colonel Townley and Captain George Fletcher had their heads exhibited upon Temple Bar, and they were the last to be placed there. The revolting sight was greatly to the taste of the brutalised mob, who gathered round the arch in large numbers for several weeks. Walpole, in a letter to Montague (Aug. 16, 1746), writes,—"I have been this morning at the Tower, and passed under the new heads at Temple Bar, where people make a trade of letting spying-glasses at a halfpenny a look." The scene is more pleasingly brought before us in the well-known anecdote of Johnson, the point of which lies in the fact that the old doctor was himself a Jacobite. "I remember being on one occasion with Goldsmith in Westminster Abbey: while we surveyed the Poets' Corner, I said to him from Ovid,—

'Forsitan et nostrum nomen miscebitur istis.'

When we got to Temple Bar, he stopped me, pointed to the heads upon it, and slily whispered me,—

'Forsitan et nostrum nomen miscebitur *istis*.'"

In 1766 the two heads they had looked at still remained upon the Bar, and in January of that year a man was observed to watch his opportunity of discharging musket-balls from a steel cross-bow at them. On March 31st, 1772, one of the heads fell down, and shortly afterwards the other was dislodged by a high wind. Temple Bar was now untenanted, but one of the spikes remained in its elevated position until the beginning of the present century. It is necessary to mention here what might not be gathered from the usual description of "human remains bleaching in the sun," that the heads and quarters that were exposed upon the Bar were previously boiled in pitch. We have as yet only spoken of the exterior, but there is also an interior, lighted by a window on each side of the building, just above the centre arch. The use of this room is reserved by the City authorities, but it is rented by Messrs. Child, the bankers, who used it until now as a receptacle for their ledgers and cash-books. When the Bar is away, and the New Law Courts rise on the north side of the Strand, Messrs. Child will have to rebuild the mean house where they have so long done business, and which was honoured by Dickens's description in "The Tale of Two Cities" as Telson's,—"a miserable little shop with two little counters, where the oldest of men made your cheque shake as if the wind rustled it, while they examined the signature by the dingiest of windows, which were always under a shower-bath of mud from Fleet-street, and which were made dingier by their own iron bars and the heavy shadow of Temple Bar." Childs's is one of the oldest banking-houses in London, Messrs. Blanchard & Child at the Marygold (a sign still retained by the firm), being, in 1677, among the fifty-eight goldsmiths who kept "running cashes." Charles II., Dryden, and Lord Keeper Guildford banked here, and Francis Child managed the lottery of Prince Rupert's jewels. It is not always easy to explain the reason of our affection for old and ugly relics, but we respect them because they have existed so much longer than ourselves, and because they help to connect us with the past. If we stand with our back to St. Clement's Church, where Dr. Johnson was wont to worship, and look towards Temple Bar and the old houses on the south side of the Strand, it does not require a very vivid imagination to forget the cabs and omnibuses around us, and picture to ourselves Johnson and Goldsmith standing in the unpavemented street, and looking up at the heads that rise from the summit of the Bar; but when all antiquity is swept away, and new houses have arisen upon both sides of the street, the present only will be before us, and imagination will find it less easy to conjure up the past.

Masonic Hall.—The Freemasons of Sheffield intend to erect a new Masonic hall, at a cost of about 10 000*l.*

FAIR WEAR AND TEAR.

The much-disputed point as to what in law constitutes "fair wear and tear" in tenements has, at the last sittings of the Bloomsbury County Court obtained a judgment in the case of Allison *v.* North, where the plaintiff claimed 19*l.* 7*s.* for dilapidations of the tenement, 29, Clarendon-road, Bayswater.

The judge, Mr. G. L. Russell, observed, that the evidence on the part of the plaintiff was that his house was held by the defendant upon a three years' agreement, which contained clauses to the effect that the house was to be kept in proper repair, and left in the same state at the end of the term, "fair wear and tear" excepted; also that the garden was to be kept in proper order, and left so, "fair wear and tear" excepted; and the question was, whether the covenants of the lease had been fulfilled. The defendant entered on the occupation of the house in the year 1871, and left at Lady-day last; and when the tenancy commenced the house was not a new one, but had been properly painted and decorated. The defendant had said something about making a complaint to the plaintiff, after he entered the house, about its not being properly prepared and decorated, and said he spent about 6*l.* on the same to make it tenantable. When the defendant left the house a surveyor was called in by the plaintiff, who reported the result of his survey in writing, and set down the cost of work necessary to be done at 17*l.* Upon this the plaintiff wrote to the defendant, and told him that he should want 15*l.* to make all the repairs good, according to his agreement. The defendant then employed another surveyor to go over the house, to see what was required to put everything into proper repair, and upon this surveyor's report the defendant wrote back to the plaintiff, stating that 2*l.* was sufficient to cover the work to be done, which he was willing to pay. This offer was rejected, but plaintiff suggested arbitration, which defendant refused. He (the judge) was sorry for that, because an arbitrator could do more justice to the parties than a judge sitting in court. Surveyors and witnesses had been called on both sides, and, as usual, they had differed widely in their statements. He was, however, of opinion from the evidence that plaintiff asked too much from the defendant, and that the defendant offered too little to the plaintiff. It was important to know the law under a three years' agreement. The provision of "reasonable wear" meant the injury that would occur of necessity to premises from the wear of three years, and which no tenant could be called upon to repair. Fixtures would be required to be put up against the walls of the rooms,—say for the hanging up of pictures,—and for such no charge could be made, for it was only reasonable wear; but if the paper of the rooms was soiled or torn then it was not reasonable wear; but if it was simply soiled where it came in contact with things in the room, then it was, in law, "reasonable wear." If also where the paper was torn, it was mended or patched up with other paper, then the tenant would become liable, because it would not accord with the other paper on the wall, the one being new and the other being soiled. It appeared to him that some damage had been done to the house, and therefore the defendant was liable. But as regards the garden, the defendant said there was no garden at all when he went in, but a mere waste piece of ground. He could not take that evidence into account, because it was running counter to the agreement. The defendant must, therefore, be responsible for the keeping of that in proper repair. He thought the plaintiff was entitled to 11*l.* 10*s.*

Verdict for 11*l.* 10*s.*, with costs, accordingly.

CRYSTAL PALACE ENGINEERING SCHOOL.

The fifth term of the School of Practical Engineering, opened at the Crystal Palace in the beginning of 1873, came to a close on Saturday last, when certificates were awarded to the successful students: Messrs. Henry Law, M.I.C.E., and W. H. Stanger, A.I.C.E., conducted the examination.

Mr. Jabez Church, President of the Society of Engineers, presided in the lecture-theatre, and presented the certificates. He felt highly honoured, he said, in having been requested to take the part assigned to him in the day's proceedings. It was in itself an honour to be connected with the noble profession of engineering, and especially to be able in any way to help or encourage their younger brethren, to whom the world had to look for future works. There had been great need for such an institution as this, as was conclusively shown by the rapid progress the school had made, from 15 students at the opening, increasing to 20, 30, and 35, until they had reached to 43 in the term now closed.

Mr. F. K. J. Shenton, superintendent of the School of Art, Science, and Literature, read the Examiners' report, from which it appeared that twenty-two of the students had obtained a sufficient number of marks for lecture questions to entitle them to go in for examination upon the subject of "Railways: their Construction and Appliances." Sixteen of the twenty-two candidates received certificates for lecture questions, their marks ranging from 201 to 100: 232 is the highest number attainable.

The certificates first presented were in the Civil Engineering Section, for general surveying, and the preparation of plans and estimates, for Parliament. The order of merit was found to be as follows:—Percy W. Britton, first; Walter Michels, second; H. C. Dent, third; Alfred

Wortham, fourth; and Joseph Hampton, fifth. The names of these five gentlemen do not appear in any of the other four groups, for each of which they have already obtained certificates in former terms. Mr. Britton, who has achieved all the honours the school can confer, was on this occasion awarded a special prize by Mr. Wilson, principal of the school, for the best sketch of the engine. He was received with great applause by his fellow students, as was also Mr. W. H. B. Green, who seemed very young to have achieved a "double first"; namely, marks for lecture questions, 201, and first in the fitting-shop; E. Green was second for marks, and second in the fitting-shop; A. H. Turner, third for marks, and first in the pattern-shop; H. J. Saunders, fifth for marks, and first in drawing-office. The other double certificates were Messrs. C. S. Smith, marks, and for fitting; F. Maurice, marks and drawing; L. Kinder, marks and pattern-making; A. H. Wilson, marks and patterns; W. H. Fisher, the same; A. Saubergue, marks and drawing; R. J. Glanville, marks and patterns; G. Marston, the same; C. J. Swears, marks and fitting; A. E. Needham, marks and drawing; and M. Harding, marks and patterns. Mr. E. W. Rees had a certificate for lecture questions,—155 marks; Messrs. H. S. Fitzgerald, A. W. N. Lewis, J. B. Cowdy, and G. E. Bokenham had certificates for drawing; F. Fitzherbert and C. Cummins for pattern-making; and J. T. Bickford, F. W. Blanco, and R. de Jaurequi, for work in the fitting-shop. Mr. W. H. B. Green, it should be mentioned, was awarded a special prize for a paper on locomotives.

In closing their report, the Examiners express, in strong terms, their appreciation of the course of instruction, both practical and theoretical, given to the students, and state especially that they consider that the more advanced course in the Civil Engineering class, will be very valuable as a preparatory study for those who propose to enter that profession. They state their opinion that "the general state of proficiency of the students does very great credit to the principal, Mr. J. W. Wilson."

The Chairman expressed his pleasure in receiving such a gratifying report. From private conversation with the Examiners, he learned that their scrutiny had given them great satisfaction. Engineers had accomplished marvellous triumphs in the last half-century, but they had great works, such as the Channel tunnel, and others, still before them, and genius had ample scope. He reminded his young friends that engineering had its serious responsibilities as well as its pleasures, and one of these responsibilities, that had more thought given to it now than in past times, was the direction of the expenditure of large amounts of capital entrusted to them in such a way as to prove remunerative. He considered the school peculiarly fortunate in having such an efficient practical man for a principal as Mr. Wilson had proved himself to be; they had plenty of theorists. He hoped his young friends would follow worthily in the footsteps of those who had gone before them. He moved that their best thanks be given to the Examiners for their faithful and valuable services. The motion was seconded by Mr. David Ogilvy, one of the directors, and passed with great acclamation on the part of the students.

Mr. Law acknowledged the vote for himself and his colleague. They had spent eight hours in the discharge of their duties with great pleasure to themselves. He did not quite think that England was about to be ruined for want of technical education, the natural aptitude and "pluck" of Englishmen would carry them through. It might be thought that the terms in this school were too short to be of any use, but he considered that even short as they were, they would be found of immense value and importance in the future. He might take that opportunity of saying that a former student of the school was in charge of his own office.

A vote of thanks was passed to Mr. J. W. Wilson, the Principal, who said that he felt that his best thanks were due to the Examiners for the great trouble and pains they had taken; and also to the Science and Art Committee for the cordial support they had uniformly given him. Engineering students might be considered rather unruly and intractable, but his lads were not so; they had worked very well indeed with the thermometer at 90° in the shade. He did not wish to talk "shop," but would urge them to perseverance, and amongst other things to the cultivation of free-hand drawing, the importance of which could scarcely be overrated. "Peg away" might not seem an elegant motto, but it was a good one for an engineer. He might add to Mr. Law's statement that one of their students had been taken by a large firm in Manchester at a reduction of 100 gs. in the premium, and another of their students had been taken by an eminent firm without any premium at all.

Thanks to the chairman concluded the proceedings.

From correspondence and inquiries, it is believed that at least fifty students will be entered for next term, which commences on Monday, the 7th proximo.

PROJECTED RAILWAY OPERATIONS IN GLASGOW.

Some of the railway companies whose lines run into or across the city of Glasgow are, as it were, just now entering into rivalry with each other in the magnitude of their projected operations for increasing their accommodation. To begin with the Caledonian, it may be stated that the preliminary arrangements for carrying out their scheme of extension are all but complete, and as most of the property required for the erection of the new Central Station in Gordon-street has already been purchased, operations are to be commenced forthwith. The railway is to come out of the Hamilton Line near the Langside-road, whence it will pass under the Pollockshaws-road, to and underneath Eglinton-street, into the old Govan Poorhouse ground, where a station is to be erected. As the line from Pollockshaw's-road southwards will be by means of a tunnel 16 ft. under the surface, the block of buildings there will have to be taken down and rebuilt. The old poorhouse has been acquired from the Tramway Company for the sum of 38,000*l.*, being a profit to the former of 17,000*l.* It is proposed to remove the whole of the buildings, more particularly as the new station here will of necessity be under the level of the street. As this will supersede the old Main-street Station, passengers from the Hamilton and Motherwell districts will be set down nearer to the centre of the city. From the site of the old poorhouse the line will run down the west side of Eglinton-street towards the existing Bridge-street Station, where it will cross the Clyde by means of a viaduct close to the Jamaica Bridge, and pass at an ample height over the great thoroughfares of Broomielaw and Argyle-street into Alston-street, which will be shut up, and the property on either side acquired for the purpose of forming the central terminal station, which is to occupy the ground between Argyle-street and Gordon-street. The company are negotiating for the purchase of the property between the Govan Poor-house and the river, and have already secured the most important,—the Port Eglinton Spinning Mill. With respect to the gradient on the proposed line, it falls in order to get under Pollokshaw's-road and Eglinton-street; then begins to rise till it is level at Cook-street. It still rises to get over the river, and gradually falls towards Gordon-street. It is difficult to predict with any amount of certainty when these extensive works will be completed, but as at least three years will be required for the construction of the bridge over the Clyde, four years must elapse before Gordon-street Station will be ready. The whole of the Caledonian passenger traffic, with the exception of the north, will be worked from the new station.

Coming next to the Union Railway, it may be stated that various properties in the line of the proposed extension of the station from Dunlop-street to St. Enoch's-square have now been secured by the directors, after prolonged negotiations, and at an immense outlay, the buildings being situate in the very heart of the city. Operations for carrying the scheme of extension into effect will, therefore, be entered on at once. In the preparation of the plans regard has been paid not merely to present, but future, requirements; and it is anticipated that when completed this new railway terminus will be one of the handsomest and most commodious in the United Kingdom. The principal entrance will be from St. Enoch's-square, on the eastern side of which it is proposed to erect a splendid range of offices in the Gothic style; the northern wing, extending eastwards to Dunlop-street, and a carriage-way running its entire length. The railway being on a high level, the platforms will be reached by an elegant terraced carriage-way, which will start from the north-west corner of the square, near Argyle-street, and by a series of broad staircases rising from the square, and being in the centre of the frontage. There will be six platforms, varying in length from 600 ft. to 900 ft., with a lofty iron and glass roof, the length of which will be 500 ft. Various conveniences needed for the comfort of the public will be on this floor, including spacious booking-hall, waiting-rooms for the different classes of passengers, ladies' retiring-rooms, a large restaurant, with dining-hall, police-room, telegraph office, book-stall, &c. On the south, where the arrival platforms will be placed, space will be reserved for the cab-stand, and the road will descend by an easy gradient to Howard-street. On the second floor of the front buildings the officials of the company will be accommodated, the remainder of the building being taken up by the Board-room, with secretary's and general manager's offices attached. These will occupy the most western division. The wing, which extends to Dunlop-street, will be appropriated chiefly to the subordinate officials. It is proposed to form a restaurant, having connexion with one on the platform, in the front division of the basement-flat. There will be several shops in the northern part, and the latest suggestion is that the southern portion should contain swimming, Turkish, and other baths. The extension is being carried out in accordance with an arrangement made with the Glasgow and South-Western Railway. It is anticipated that the new portion will be available for traffic within two years.

With regard to the North British Railway, the directors have long admitted the necessity of providing additional accommodation at the Queen-street Station, but the subject has been considered by them in a more striking light since the communication to them by the magistrates of Glasgow. Before anything can be done in the way of extension, it is felt that the goods department will have to be transferred from Queen-street. It is stated, however, that no action will be taken until the Sight-hill branch is completed. Even should the goods department be removed, the accommodation will still be limited, so long as the mouth of the tunnel is so contracted as to admit of only two sets of rails. A plan is suggested, though it is not yet matured, for replacing the mouth of the existing tunnel by a girder bridge, so that six or eight sets of rails might stretch from the bottom of the station to a considerable distance up the tunnel. It is not thought probable that the North British directors will seriously consider the proposal for an underground railway from Slatecross line to Queen-street, nor yet another plan which has been suggested by "private parties," of connecting Queen-street and College Stations. The carrying out of the latter scheme would cost a million of money.

ARCHITECTURAL EDUCATION IN JAPAN, AND PROGRESS OF THE COUNTRY.

Her Majesty's Secretary of Legation, Mr. Watson, has just published a long report upon the educational system of Japan, and from this we glean some information with regard to the study of architectural, building, and engineering matters in that country. The government of Japan being a departmental one, there is a minister for each department, and all these departments employ a certain number of foreigners for educational purposes. The principal one is the "Kobusho," or Department of Public Works, which comprises the following sub-departments, viz., railways, telegraphs, light-houses, mines, surveys, engineering, and mechanical. It is mentioned that at the Survey Department there are twenty-one Japanese students, and at the Engineering thirty. There is a large engineering college in connexion with the Department of Public Works, the principal of which is Mr. Henry Dyer, C.E., M.A., B.Sc., University of Glasgow. At this college the course of training is fixed to extend over six years. During the first four years it is provided that six months of each year will be spent in the practice of the particular branch which the student may select, while the last two years of the course will be spent wholly in practical work. It is the aim of the college to train students in the following branches of technical education;—architecture, civil engineering, mechanical engineering, telegraphy, mining, metallurgy, and practical chemistry; and the student's whole course of training may be thus divided:—1, the general and scientific course; 2, the technical course; and, 3, the practical course

The first course forms the foundation of the technical applications, and is common to all the special divisions into which the students are separated. As to the technical course, each student will be required to attend the special technical course for that branch of engineering, which will be select. This course includes architecture—viz., the study of surveying, strength of materials, geology, architecture and building construction, freehand drawing, &c.; civil engineering, higher mathematics, higher natural philosophy, mechanical engineering, &c. The progress of the students, it is stated, will be tested by periodical examinations, and by assigning values to drawings, reports, &c., executed by them at college, as well as to work done by them in the summer in connexion with the Department of Public Works. At the end of the second year, a general examination will be held on all the subjects of the scientific course, and at the end of the fourth year an examination will be held in the technical course. Each student who attains the prescribed qualifying standard will receive the diploma of "Licentiate of Engineering" (L.E.), and will be appointed assistant in that branch of the Public Works Department which he has selected. At the end of the sixth year a final examination will be held, in which the student's knowledge of the works he has been engaged in, and those of a similar nature, will be tested; and he will also be required to send in complete drawings, specifications, &c., of a work on a prescribed subject. Having passed a satisfactory examination, each student will receive the diploma of "Master of Engineering" (M.E.), and will be appointed engineer to the Board of Public Works. So that the educational system of the college may be thoroughly complete, there is every opportunity afforded the student for practical study. There is a physical laboratory, a chemical laboratory, workshop, and a technical museum, in the architectural department of which are models of the various methods employed in building construction, together with examples of the different styles of architecture. With regard to drawing, it is pointed out that during the first two years the student will be taught the principles of geometrical drawing, and its application to elementary examples in general construction. This course will comprise architectural drawing,—viz., details and construction of roofs, floors, &c.; general details of buildings, architectural design, principles of ornament suitable to the different styles of building, and leading features of the various historical styles of ornament. For engineering drawing the study will be of working drawings of general engineering works, such as foundations, earthworks, walls, framing, wood, stone, girder, tubular, and suspension bridges, general railway works in their various details, harbours, lighthouses, docks, canals, &c. With regard to those students who select to make architecture their special branch of study, the course comprises,—a description and review of the different styles of architecture, materials used in construction, manufacture of bricks, tiles, drain-pipes, &c., composition of mortars, cements, and concrete, different methods of putting in foundations, cost of excavations in different soils, construction of walls of brick, marble, &c., construction of timber and iron roofs, floors, &c., arches of brick, timber, stone, calculation of the strength of girders, practical examples in modern architecture, details of specifications and contracts. The course of "general construction" is also very complete, and likely to turn out the student thoroughly proficient. The course of "special construction" embraces roads, — selection of route, survey, earthworks, arrangement of gradients, construction of roads, drainage, &c., railways, selection of route and arrangement of curves and gradients, different systems of haulage, arrangement of termini and stations, canals, choice of route, classification of canals, arrangement of levels, locks, &c., construction of aqueducts, tunnels, masonry, excavations, sinking shafts and driving headway, subaqueau tunnels; harbours, docks, and bridges will also be most thoroughly studied.

In the second part of his report, Mr. Watson devotes some space to the consideration of the progress achieved of late in Japan. Amongst the most prominent indications of such progress is the introduction of steam power, and it is mentioned by Mr. Watson that there is now a line of railway, eighteen miles in length, in operation between Yedo and Yokohama, and the average number of persons who travel upon it each day is about 4,000. Another line about twenty-three miles in length, will be opened in the course of a short time, which will connect Hiogo with Osaka; and the preliminary surveys have been undertaken for the continuance of this line to Kioto. The line already in operation, it is satisfactory to hear, has been worked with complete success, its advantages being thoroughly appreciated by the Japanese of all classes. As proofs of progress in other respects, it is mentioned that steam vessels now ply in the Japanese waters in many directions; that the use of wheeled conveyances has become of late much more general; that telegraphs have been introduced, though not with the same success as railways; that foreign machinery has been imported to a certain extent; that a system of lighthouses has been established under European direction, which is being extended along the entire circuit of the coasts; that quays have here and there been constructed; and that lock hospitals have been introduced in several of the Treaty ports. Considering these indications of progress generally, it would certainly appear as though Japan means to go a-head.

PUBLIC WORKS IN INDIA.

The appointment of a Member of Council who shall be responsible to the Viceroy for all Indian Public Works may seem highly satisfactory to the Houses of Lords and Commons; and to those who are enabled to form any conception of the size of the country and the magnitude of the task involved in dotting the face of British India with all kinds of building and engineering works the appointment is certainly a tiny step in the right direction. Henceforth, there will be at least one responsible official in the Indian Department of Public Works—the P. W. D., or Public Waste Department, as it has been too long designated by both rulers and ruled in the country itself.

But what public servant will accept a post of almost unprecedented difficulty and certain danger? He must be versed, if not tried, in Indian politics; he must have not only confidence in himself, but confidence in those for whom he is in duty bound to hold himself responsible. There is only one man living who can accept the position with grace, or even approach it without fear of being accused of temerity; and this man is Major-General Strachey, R.E., who, during the late Lord Mayo's administration, was Secretary to the Government of India in the Department of Public Works. This gallant officer's courage in the face of inimical facts has been tested before a Parliamentary Commission specially convened to elicit information concerning the appalling waste of Indian public money by engineering officials, the absolute failure and official condemnation of some public works, and the early deterioration of others. It was before this Commission that General Strachey, with becoming irascibility, made his declaration that the Department of Public Works was "the best managed Department in India." Of course this little speech was a joke, otherwise it would have been a severe reflection upon, if not defamation of, the whole administration of the Peninsula; and the joke was continued only the other day by a personage no less exalted than the Marquis of Salisbury in his good-humoured address to the students of the Engineering College at Cooper's-hill. Lord Salisbury's anecdote of the gentleman connected with the Indian Civil Service,—probably Sir George Campbell,—who had not the heart to look upon youths each representing an eventual expenditure of one million sterling, and who consequently stayed away, is eminently amusing. It was equally funny when the Indian Secretary of State bantered the engineers, both military and civil, for their loose notions of a signed estimate. It was natural for the audience aforesaid to applaud when Lord Salisbury reminded them that the work of the engineer was always a source of satisfaction to himself, since the usefulness of a bridge or a railway could never be doubted; but the European inhabitants of India, who have sometimes to be paddled across rivers in native canoes because the bridges have tumbled down, or to encamp on the open plain under the burning sun or continued rain, because the European barracks have been condemned as unsafe and unfit for habitation, may, perhaps, look at the matter in a different light, and with feelings of a diametrically opposite nature. The natives for whose ostensible benefit all these engineering works are done, and paid for with their own money, may also regard the joke as a practical one; and they are not unlikely to have some reasonable doubts whether the millions of money to be disbursed upon canals and other works for the sake of averting the consequences of chronic famine could not be more safely invested elsewhere than in the hazardous labours of the Anglo-Indian engineer. We who know something of the difficulties attendant upon estimating the cost of European buildings, and the unforeseen circumstances which often arise to swell expenditure in spite of the most conscientious architect or most indefatigable builder, may be expected to feel compunction in criticising engineers placed in positions of far greater difficulty, often distant in a distant country from their colleagues, and, indeed, professional advice of any description,—surrounded by native workmen, whose language they barely understand, and whom they dare not trust either in word or act. Nevertheless, much as we are disposed to admit the perplexities which thwart the best-intentioned officials in India, we cannot think them irremediable. We try to imagine the sort of commotion which would arise in this country if a tenth of the failures or blunders in Indian engineering works could occur in England, or a hundredth part of the money known to have been wasted at Saugor, were squandered by the Government even in an obscure Irish village. Imagine a building erected with public money, say 5,000*l.*, in Connaught, to be condemned as useless and dangerous a year after its completion! Yet, in India, a similar effort of imagination is unnecessary. At Saugor, in the Central Provinces, where there is a Chief Commissioner and a complete hierarchy of officials in all departments, barracks were built at a cost of 166,000*l.* The time spent in their erection was four years and a half. In little more than one year after their completion they were condemned as dangerous and useless by a committee specially appointed for the purpose by the Government of India; and the disgraceful story was revealed to the public in an extra supplement to the *Gazette* towards the close of 1872. That it was worse than the many other similar tales of mismanagement and incompetency of which the public had been already informed was probably the reason that it attracted attention and aroused disgust even amongst apathetic Anglo-Indians. An intimate acquaintance with the Saugor scandal, and the results of the Government censure upon the officers concerned in it, lead us to doubt whether the appointment of a Public Works Member of Council will ameliorate the condition of the Department itself, or, indeed, do anything else than increase the actual perplexity caused to Lord Northbrook by the number of his councillors.

The organisation of the Department of Public Works is admirable,—upon paper. As in Bengal, or Madras, or Bombay, so in the Central Provinces, there is a Chief Engineer, whose business is general; there are Superintending Engineers, who each control a Circle: each Circle is divided into Divisions; and an Executive Engineer has charge of each Division. Each Executive Engineer has an Assistant Engineer under him as well as sub-engineers, foremen, native clerks, workmen, &c. Now, the story of the Saugor Barracks shows all these functionaries thoughtlessly deceiving each other during the progress of the works, and gallantly shielding each other after the failure of the same. One black sheep in the flock, however, betrayed them; and he, an Executive Engineer, did not enter upon charge of his Division until the completion of the barracks. A captain of the Royal Engineers was in charge from the beginning to the end of the works, and upon him necessarily rested the responsibility for their failure. His defence of himself was most *naïve*, gentlemanlike, and modest. He did not know that his work was faulty; he had had little experience in building, and less instruction. His superiors had approved of much that he had done at the barracks, and he consequently thought that it must be right, and so continued blindly to do wrong. He defended himself in polished language, after the same fashion as his overseer, a gallant sergeant in the corps, who shouted "Bedad, sir, I thought I was doing it first-rate. I had only just come from Roorkee,* and not much I knew of building, and no one told me I was going wrong." Now, during the period of the works, there were two

* An Engineering College in the North-West Provinces, where this man had served for twelve months, after having been seven years in the army. He was originally a labourer.

Chief Engineers in charge of the Central Provinces,—the first a colonel in the Royal Engineers, and the next a civil engineer of high standing and experience. The Superintending Engineer of the Jubbulpore Circle was responsible for the Government buildings at Saugor. He paid three visits to the barracks in question, and wrote one report about them. He also was a man of high reputation, and his printed report showed the works to be most satisfactory and creditable to the Executive Engineer in charge of them. The first Chief Engineer only inspected the barracks once during the two years and four months while they were being built; but his successor identified himself with their failure in a way which goes far to prove the almost utter impossibility of establishing individual responsibility amongst a body of men held together by such *esprit de corps* as are the Indian engineers. When the new Executive Engineer arrived, he reported the barracks to be insecure, and said that the walls were cracking; also, that after using his fingers and a walking-stick, he could bury his arm in some of the rubble work. The Chief Engineer answered his official report in the following words:—"Mr. —— has the honour to inform you that he disapproves of your picking holes in the Saugor Barracks without orders." He at the same time, and during a long time afterwards, maintained that the barracks were "sound" and well built; that the black sheep who had been picking holes was wrong, and the only person to blame; but this gentleman, Mr. Fitzjames, turned out to be right, and the Saugor barracks were evacuated soon after they had been shored up as a precaution against immediate accident. These buildings were erected not by contract with builders, native or European, but by the Department itself. The soil upon which they rested was good; and had the simplest precautions been taken, the foundations might have been rendered secure, and even perfect. That sixteen lacs of rupees were squandered to no purpose upon them is due mainly to the systematic abuse of a really workable system; and the persons who should have suffered censure were the Superintending Engineer of the Central Provinces at that time, and the Secretary to Government in the Department located at Calcutta,—not the unfortunate captain of engineers, who was deprived of his appointment and incapacitated from holding any other in the Department of Public Works. That this has been felt since probably accounts for the fact of the officer in question having been lately re-appointed to a post in the Punjab, under the engineer-in-chief of that Province. Now the secretary to whom we have just alluded was General Strachey, who has been named, with some show of probability, as the first Public Works Member of Council at Calcutta. If we thought that his or any one else's appointment to the post were the prelude to a complete reform of the present mode of working the Department, and heralded an investigation into the duties of the different grades of officers, we would wait with folded arms for so desired a result; but we fear, on the contrary, that the creation of the appointment will be deemed by the Indian Government sufficient to keep the press and the public quiet for some few years at least. The most fitting person to do the deed, *i.e.*, reform the Department of Public Works, is Mr. Ayrton; for very disagreeable work will have to be accomplished before any palpable good can be effected in what Anglo-Indians confidently assert to be the worst managed Department in India.

The avowed difficulty throughout India,—though less in Bombay and Madras than elsewhere,—is to obtain proper working drawings and properly studied designs. Some of the drawings made for public buildings in Bengal are reported to be ludicrously inadequate, even though signed, as is the custom, by officers of all grades, both civil and military. This, at least, can be remedied; but the question of fixing responsibility is a harder one to answer. The Ministerial appointments in India, if we may so term them, are held for five years only, and buildings sometimes take longer than that time to complete. Half a dozen different Executive Engineers have been known to be employed successively in the erection of one building; and be it remembered, this officer performs the functions of the English builder. He also, in conjunction with his Assistant Engineer and some native draughtsmen, makes the design; and thus builder and architect are rolled into one functionary. Such a *mélange*, in England at least, usually results in the builder getting the best of it, to the detriment of the client. Now, the client in India is "Government" acting for the people; and public money is often not expended with the same scrupulousness as are private funds. If the Executive Engineer is to be the builder,—and this is his logical position,—then his master, the Superintending Engineer, should be the architect, and all designs should emanate from his office. The Superintending Engineer, who is the head of a Circle, has, let us say, half a dozen Executive Engineers under him, and each one of these latter may be engaged upon one, or even two, large buildings. If the former have a proper staff in his office he can prepare designs for a dozen buildings; and, in spite of what has been officially, and even professionally, said to the contrary, the working drawings and full-size detail drawings ought to be made by him who makes the design,—not by the builder who carries it out. To do this, the Superintending Engineer must be educated as an architect as well as an engineer, and he should rise to his elevated position, not by seniority or routine, but by merit,—though who, alas! shall decide if he has any, or even recognise it when he has? It is not, however, beauty in design that is required in India. The question of Gothic or Classic architecture may be shelved as far as that country goes for a number of years yet. Sensible work-a-day designs, carefully drawn to a large scale, with the building parts put together according to the recognised principles of construction, are alone necessary. The tendency, in Bengal at least, is to under-rate the value of good drawing, and, with unqualified arguments in favour of the "practical," to discard theories of construction. Every new building should be *built upon paper* by competent hands and heads before the Executive Engineer be permitted to commence the works; and the superintendence of such works should devolve upon him who designed them,—upon whom obviously the responsibility of constructive failure or success should be made to fall. The Superintending Engineer's office would thus assimilate to that of a professional architect; and to do this effectually a staff of European assistants,—good practical draughtsmen,—ought to be attached to each Circle, at least in the large cities. This is nowhere more required than in Calcutta, where the natives, unpossessed of any valuable indigenous examples, have come to look upon architecture as an exploded, unpractical, and useless art; to regard modern buildings as hereditary occupation for Europeans who have been unable to find employment in Europe, and intended to endure for the space of an administration, which, unless death intervenes, lasts five years.

THE NEW ALEXANDRA PALACE.

The first building erected at Muswell-hill was burnt down on the 9th of June, 1873, and the second is now finished, as regards the material work, the first brick having been laid on the 10th of October, 1873. The last touches are now being given by the decorators.

The new building stands on the same spot as the old one did, and is of the same length and breadth, but the enclosed area is much larger, it covering 7½ acres, for while the first may be described as a long and comparatively narrow nave intersected by three transepts projecting considerably at both façades, the second building is a complete parallelogram; the amount of additional space thus obtained is very large.

As in the old building, the great hall forms the central transept, but in place of a dome it has a semicircular and very lofty roof supported on four rows of columns, and thus a grand hall is obtained 386 ft. long by 184 ft. wide, with parallel sides, in which is a series of doors, and when necessary it can be shut off entirely from the rest of the building.

The central span of the roof is 85 ft., and light is obtained by two broad belts of white glass with ruby borders running the whole length of the roof, and by a series of lunettes forming a clearstory filled in with ornamental coloured glass; as also are the circular windows of the gables at each end. The central portion of the roof between the glazed belts and those between the latter and lunettes including the spandrels are decorated with bright Cinque-cento paintings of the Italian school. Right and left of the great hall are two courts, one of which is roofed with glass, and the other open to the air; these inclosed gardens are each 210 ft. long, 140 ft. wide. On each side of these courts are corridors of the same length, those on one side being for picture-galleries, and those on the other to be decorated with sculpture, objects of art, climbing plants, and flowers.

Beyond these courts, and between them and the eastern and western entrances are two large conservatories surmounted by glass domes, one intended for a permanent show of plants, the other for horticultural and floral exhibitions. In order to give the greatest possible freedom of movement to large masses of visitors and also to ensure the ventilation, the partition walls of all the parts we have mentioned are filled in with glazed doors, which fold into recesses, so that when open the entire central portion of the building is free from end to end. At the north end of the great hall is the grand orchestra, seating 1,150 performers, with organ by Willis. A large concert-room is provided at the north-west side of the building which will hold 2,700 persons sitting, and on the north-east side, in a corresponding position, a complete theatre of about the same capacity as the concert-room. Both are provided with all necessary dressing-rooms for artists, and every other accommodation requisite.

The whole building is warmed with hot water, the apparatus being supplied by Mr. Phipson, C.E.

On the right and left of the western entrance are a small theatre for special purposes, and a lecture and reading room, 60 ft. by 40 ft. The above forms the whole of the exhibition building proper, which is provided with tea, coffee, and refreshment bars variously placed, and also buffets and retiring rooms in convenient situations.

On the north side of the building there is no upper floor, the theatre and concert-room occupying the whole space.

The south front is devoted entirely to the hotel department, which occupies the two floors and the basement, and is on an exceptionally large scale. To the west of the great hall are large first-class dining and ante rooms, and on the eastern side a grand coffee-room, luncheon and grille room. On the one pair the western end contains a great banqueting-hall, 200 ft. by 50 ft., and on the corresponding side private dining-rooms of various sizes.

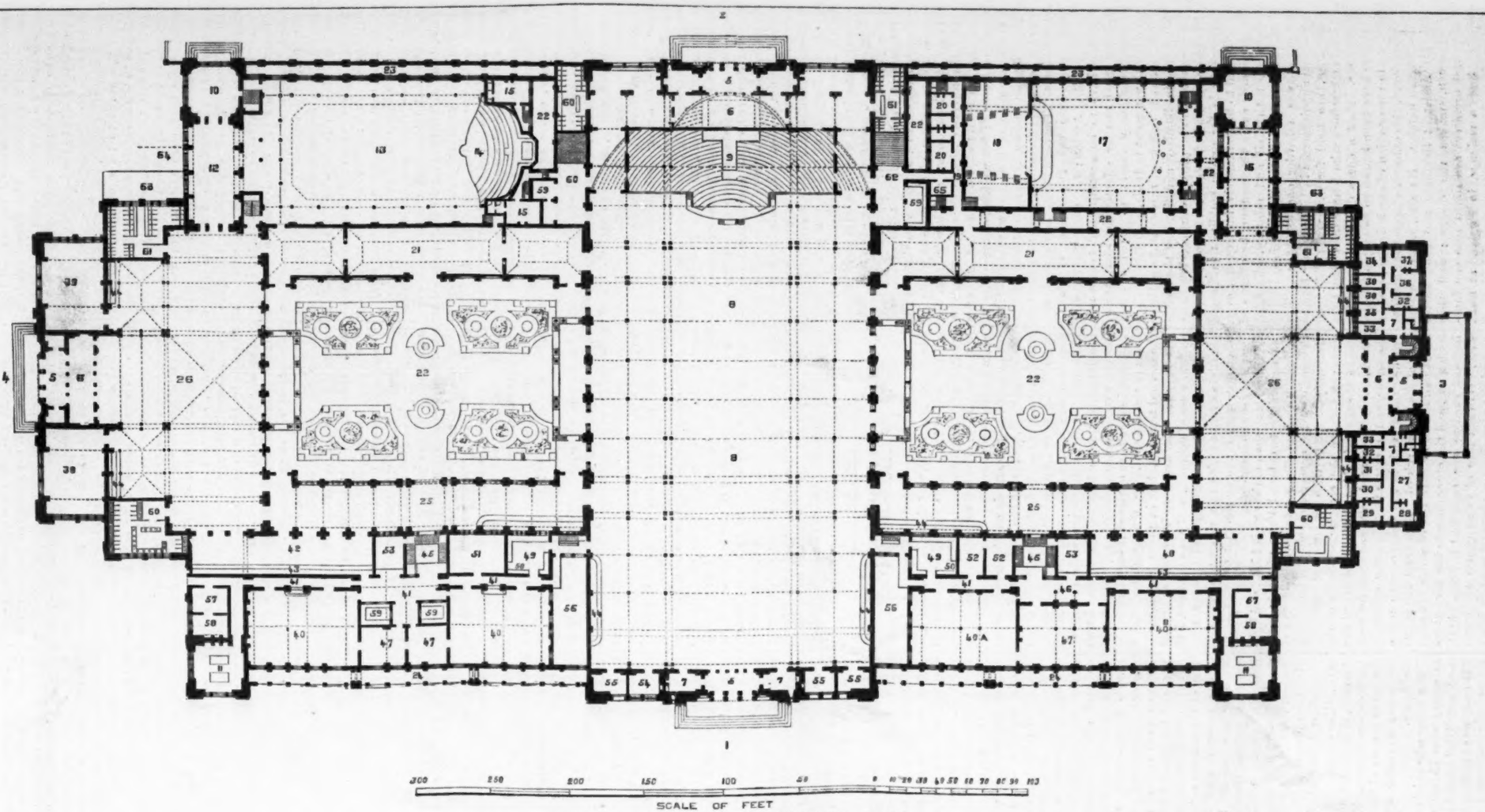
The service and other rooms on both floors, and the kitchens, store-rooms, cellars, and offices on the basement, are almost innumerable and of large dimensions. The whole of the rooms on the ground-floor open into a covered colonnade, and those on the upper floor into arcades as seen on the accompanying view which gives the general effect of the building without the necessity for any description. It may be mentioned, however, that the end of the great hall and the corner towers project 10 ft. beyond the rest of the façade, and the arcades are 10 ft. deep.

The window openings on the terraces are 20 ft. high, and down to the floor-line the lower sashes are hung: the top part opens for ventilation while the centre portions are immovable. On the top of the four towers are water reservoirs containing 16,000 gallons each, and at the angles of the central hall are four other reservoirs of 7,000 gallons each, the whole supplied by steam-pumps from the New River Company's reservoirs.

Completely surrounded by its own park the building is accessible on every side, and the railway being carried beneath the terrace, stairs on each side of the great hall lead from the platform of the station into the Palace. The company's board-room, and the offices of the manager, clerks, and assistants are on the two floors on each side of the eastern entrance. A post and telegraph office will be formed to the left of the south entrance, and a covered carriage-way at the eastern entrance.

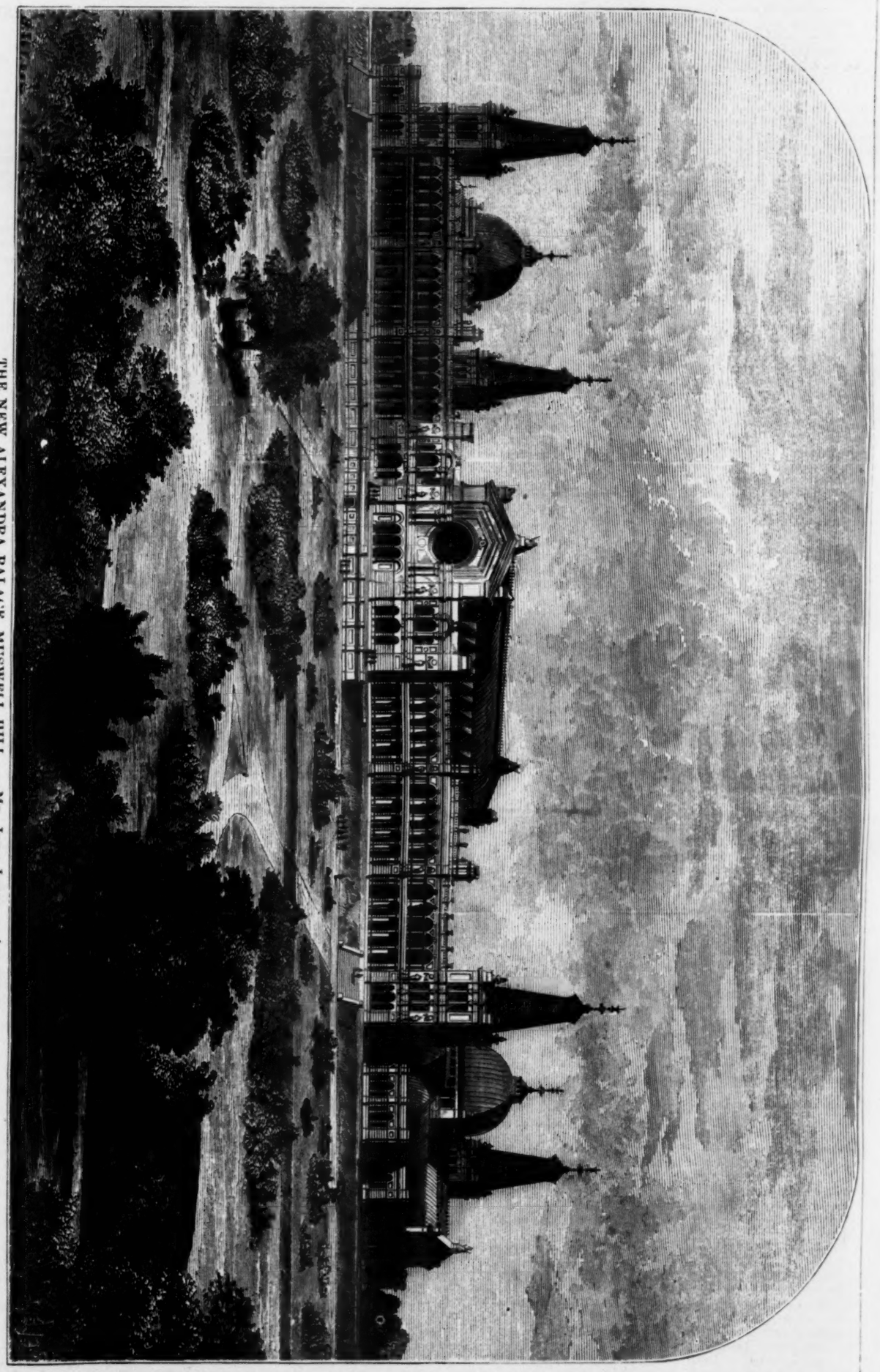
The material used for the façades of the building are white Huntingdon and dark-coloured yellow bricks, the mouldings and ornaments being of Portland cement. The corner towers are surmounted with decorated Mansard roofs and metal finials, and are 180 ft. high from the ground-floor. The extreme length of the new Palace is 897 ft. 6 in. and it is 386 ft. wide. The architect of the building is Mr. John Johnson, of Buckingham-street, Strand; the contractors are Messrs. Kelk & Lucas; and Mr. Clements is clerk of the works. The decorations are being executed by Mr. Schmidt and his assistants.

For those who rejoice in statistics we are able to record that 15,000,000 of bricks have been used, and 3,000 tons of lime. The wrought-iron, 764 tons, was supplied by Messrs. Handyside, of Derby; the cast-iron, 1,354 tons, by the Staveley Works, Staffordshire.



THE NEW ALEXANDRA PALACE.—*Plan.*

1. South terrace.
2. North terrace.
3. East (inclosed carriage) entrance.
4. West entrance.
5. Outside lobby.
6. Inside lobby.
7. Lobby.
8. Great central hall, 386 ft. by 184 ft. 6 in.
9. Great orchestra: organ over inside lobby.
10. Tower.
11. Billiard-room.
12. Concert-room corridor.
13. Concert-room, 145 ft. by 95 ft. 7 in.
14. Orchestra.
15. Artists' room.
16. Theatre corridor.
17. Theatre, 104 ft. 6 in. by 83 ft. 6 in.
18. Stage, 52 ft. deep.
19. Artists' entrance.
20. Artists' retiring-rooms.
21. Exhibition gallery, 30 ft. wide each.
22. Open court.
23. Open area.
24. Open colonnade.
25. Glazed corridor, 30 ft. wide each.
26. Conservatory, 201 ft. by 104 ft. 4 in. each.
27. Board-room.
28. Secretary's office.
29. Secretary's clerks.
30. Clerks' office.
31. Board's refreshment-room.
32. Waiting-room.
33. Porter.
34. First superintendent.
35. Second superintendent.
36. Manager's room.
37. Manager's clerks.
38. Library and reading-room, 60 ft. by 40 ft.
39. Theatre for special purposes, 60 ft. by 40 ft.
40. First-class banquet-room, 73 ft. by 50 ft. and 67 ft. by 50 ft.
40a. First-class coffee-room, 67 ft. by 50 ft.
40b. Grille and cold meats room, 70 ft. by 50 ft.
41. Serving passage.
42. Refreshment-bar.
43. Buffet.
44. Refreshment-buffet.
45. Entrance.
46. Vestibule.
47. Anteroom.
48. Tea and coffee bar.
49. Serving-room.
50. Lift. 51. Staff-room.
52. Messrs. Bertram and Roberts' offices.
53. Wine-bar.
54. Telegraph and post-office.
55. Office. 56. Glazed court.
57. Wash-up. 58. Glass.
59. Hats, coats, &c.
60. Ladies' retiring-room.
61. Gentlemen's retiring-room.
62. From railway platform.
63. Gateway incline.
64. Corridor to proposed aquarium.
65. Stores.



THE NEW ALEXANDRA PALACE, MUSWELL HILL.—Mr. John Johnson, Architect.

DWELLINGS OF THE SPANISH ARTIZANS AND SLAVES IN THE WEST INDIES.

Porto Rico, an island of the Greater Antilles, affords a very fair example of the condition of the Spanish industrial classes in the West Indies; and although their condition cannot command the same degree of attention as that of the same classes in countries of greater importance, there are many circumstances which have a peculiar interest, particularly the unusual proportion of whites to coloured people, and the fact of the production of the island being the largest in the tropical world for its extent, and at the same time the number of slaves employed in it proportionately the smallest. There is, we may premise, no inducement for the British artizan or labourer to seek for employment here. The labourer working in the fields would perish in less than three months, and the mechanic would be disgusted with the discomfort and impurity of the dwellings, and little disposed to compete against extremely zealous natives for a daily wage equal to that which he gets at home. The Creole artizan is, however, contented with his condition. He earns about 4s. a day, and although rent is high and clothing dear, he contrives to appear on Sundays and Saint days hearty and brisk, resplendent in a black cloth coat, white waistcoat and trousers, red or blue cravat, chimney-pot hat, gilt watch and chain, and an assortment of spurious jewelry. He lives on such food as yams, plantains, rice, with an occasional piece of dried beef or salt fish, flavoured with oil or garlic, and his favourite tipple is a dram of new rum.

In town the artizan lives in a single room about 10 ft. square, destitute of windows or aperture except the door leading from the *patio* or court of some large house, in which hot uncomfortable den he is pleased to dwell, rather than exert himself to procure better accommodation. The space in which the population of the city is massed being less than half a mile square, the houses are naturally crowded together. Some are three stories high, and all are built strongly of brick and mortar. They are all on the same plan,—an oblong square, in the centre of which is an open court. Around these courts are the dwellings of the industrial classes, which are no better than cellars 8 ft. to 10 ft. square, paved with stone, having one door, and no other means of ventilation. There are as many as eight or ten of these abodes in a large house; they all lead into the court, where is the well supplied by rain-water from the roof of the house, which is flat for the purpose. This serves also for a promenade in the evening, and notwithstanding that it contains the water supply, is rendered foul by rejected cigar-ends, the spitting of Spaniards, and the dung of cats, birds, &c. Near the well in the court is the cesspool, so near that its contents must percolate into the drinking-water, yet it is rarely emptied.

In these damp, sunless courts, into which the rooms of the working classes open, about thirty people live, there being an average of five persons to each room. There they eat, drink, sleep, wash occasionally, and cook, and the smells arising from these operations,—the fumes of garlic and catalan oil, and the disgusting odour of the cesspool,—would render an English artizan's life miserable. "I watched," says a resident, "one old lady who combined economy in water with cleanliness of person: every day she came into the court with a tumbler of water and a piece of stick, with this she cleaned her teeth, discharging the water into her hand and washed her face with it." Yet, strange to say, this foul-smelling, overcrowded, air-poisoned capital of Porto Rico is one of the most healthy places in the world. Here all hygienic laws seem to be defied. The cemetery at times is not opened for eight days.

The houses of slaves upon an estate are very different from those in town. They are like large deal boxes of about 8 ft. square fixed upon a stage raised about 2 ft. from the ground. Each has a door, and sometimes a small window; in it the slave and his family live. There are estates, however, where the slaves live in barracks or "quarteles," which are only boxes of larger size, into one of which all the men are put at night and all the women in the other, and locked in. In these cases little or no regard is paid to decency, cleanliness, or ventilation; filth reigns supreme within and without.

The free labourer is, if anything, worse off than the slave as regards habitation. He pitches it anywhere that he can get permission to do so. It is usually built of poles instead of planks, filled in with cocoa-nut leaves, and is often situated in low, unhealthy positions. It is generally raised higher from the ground than the slaves; but it is in such a wretched condition being unprotected from the heavy tropical rains, and violent winds, and the great vicissitudes of temperature prevalent here, that the free man and his family are often in a deplorable state. The wretched shed during a storm is something worse than the open-air torrents of dirty water coming through the decomposed leaves of the roof and horizontal douches blown through the sides. In this shed the family take shelter, and sit shivering with ague, looking the very picture of misery until the storm has abated. They might, of course, build better habitations, but they say that upon the slightest provocation the estate-owner causes them to be burned, and drives the inmates off the property.

The slave men and women and freemen upon a sugar estate are employed in planting, cutting, grinding, and cleaning the cane. They work during crop time twenty out of twenty-four hours. For a mechanic the hours of labour are about ten,—that is to say, from sunrise to sunset. The quality of work executed by them is rough, but strong. This is needful here considering the frequency of earthquakes. Yet the houses, so strongly have they been erected, have withstood them all. On the edge of a precipitous hill stands the Casa Planca which was built 300 years ago by Ponce de Leon, and which is still in excellent preservation. It is pointed out with pardonable pride as a proof of the great strength and durability of native workmanship.

METALS IN HOMER.

The range of metallic knowledge shown by Homer is very restricted, and some points are almost unintelligible.

Thus, there is no specific word for metal in general but χαλκός. Μεταλλον occurs thrice in the "Iliad," and twice in the "Odyssey." It is not in any way applied to metals or to mining, being strictly confined to its primitive meaning, "to search out," a something similar to our word "prospecting," and whence the *search* for metals below ground, called mining. It is clearly known that surface-found metals alone were at first used, and, very probably, meteoric iron before they became acquainted with native ores.

Modern travellers show that Asiatics still work the scattered ore found loose among the soil at Unieh Kaléh, anciently Chalybes in Pontus, the very cradle of the steel manufacture.

Some writers fancy that Homer mentions the mixed metal called *electrum*. This is a fallacy; for ἠλέκτρον should be rendered "amber." The word occurs thrice in the "Odyssey"; in the "Iliad" we have only ἠλέκτωρ, "the sun."

Μολυβδος occurs twice in the "Iliad," and the writer well knew the properties of lead. I do not find it in the "Odyssey."

Κύανος is a very obscure word; it occurs fifteen times in the "Iliad," six times in the "Odyssey." Its modern equivalent would be *cyanite*, which is a silicate of alumina; κύανος was known to Theophrastus as *lapis lazuli*. In Homer it probably means a lacquered or enamelled metal. Some writers render it as steel, but that word does not suit all passages; and steel, if at all known, was an equivalent for iron.

Κασσίτερος for tin occurs ten times in the "Iliad"; I do not find it at all in the "Odyssey."

Σίδηρος, iron, occurs twenty-three times in the "Iliad"; twenty-four times in the "Odyssey." Homer speaks of iron in the mass, and it was used freely for agricultural, household, and domestic implements; in some passages it might very properly be rendered "steel," which, however, is merely a subsidiary distinction, for steel is iron.

The common word after all,—the term in general use,—is χαλκός; in different forms it appears 173 times in the "Iliad," 66 times in the "Odyssey." It cannot be denied that the primitive meaning of χαλκός is "copper"; the weapons known to Homer's heroes were certainly manufactured out of copper: copper with alloy, but chiefly of copper. We talk of a bronze age, but Homer did not know the word, nor had he any proper equivalent for it; to him the material was copper, and it is very doubtful if he could distinguish the distinctive ingredients. If noticed, it would be to him a mystery of Hephaestos; Greeks called copper, bronze, and brass alike by the name of χαλκός; and even now, when we disinter a metal weapon of antiquity, it needs a competent analysis to prove its quality.

Copper was abundant, very accessible, and easily worked; it was *par excellence* the metal of pre-historic antiquity, and I infer that when the poet meant to designate any article of metal, without specifying its character, the word χαλκός was inevitably resorted to.

There is a fine Greek helmet, with other accessories, in the Tower armory; I fancy it is attributed to about 400 B.C., and when I saw it last its coppery tinge was unmistakable., I do not know if it has been analysed.

In this we make no account of gold and silver; both were abundant; but I stop with the materials available for warlike weapons. A. H.

THE DECAY OF STONE IN BUILDINGS.

Sir,—The letter of "Pro Bono Publico," in your issue of July 18th, page 612, I read with great interest. The subject of which it treats demands the attention of all who are interested in the erection and preservation of buildings in which stone is more or less used. I quite agree with your correspondent that the various attempts to arrest the decay of stone have hitherto been of little or no avail, and that the true cause of our stone buildings so soon crumbling to dust lies in the very first operation in the process of building, viz., in the preparing of the stones by the masons. The evil is, undoubtedly, done in the masons' shop. "Pro Bono Publico" attributes the decay to the use of heavy hammers and mallets, and wide chisels, by the masons, and intimates that by employing such heavy tools faces of the stone so treated are for some depth pounded to a fine powder. Now after having myself carefully studied the matter for years, I would suggest another circumstance which I believe to be the real cause of decay. Nearly all stones, as we all know, have a face and a bed, or, in other words, a right and a wrong way of the grain, and the first thing a mason should do after putting a stone on his banker is to examine it and satisfy himself which is the bed of the stone, and then work it accordingly, *i.e.*, work it so that when it is fixed in the building it will be laid on its natural bed, or in the same position in which it was found in the quarry. Now this is the root of the matter. *A stone that is not laid on its natural bed will most assuredly decay.* If we look at some stone buildings but recently erected fast hastening to decay (and there are not a few of them), we may observe that one stone has perished and requires to be cut out and replaced by another, while probably the one next to it is as good as when first placed in the building. Both stones are from the same quarry; perhaps both cut out of the same block. How is this to be accounted for? In nearly every instance because the one has been laid on its natural bed, while the other has not. The working of stones where the bed is made to take the place of the face is assuredly the chief cause of the lamentable state of dilapidation observable in some stone buildings but recently erected. (I can assign no other sufficient cause where good stone is used.) Proper care and precautions furnish an easy remedy. Almost the first thing that meets the eye in looking over the specification an architect has prepared for the builder is, "that all stone is to be of the best quality, and to be laid on its natural bed.") But is this clause strictly adhered to? It ought to be; why is it not? For various reasons. Sometimes to save stone, sometimes to save labour, but principally from carelessness on the part of the mason. The bed of some stones is very difficult to detect in the first instance, and when worked much more so. In all dubious cases the question should be decided by the architect through his clerk of works. If an experienced practical mason, he will at once detect it. I say select the most durable stone that can be obtained; let it be an inflexible rule that every stone shall be laid on its natural bed. We may then hope that our stone structures will be sound, substantial, and permanent. T. G.

Wenlock. — Messrs. Laxcelles & Co. have almost finished the rebuilding of Lord Wenlock's Shropshire residence. It is built from a design by Mr. Shaw, and is in the Tudor style. The management of the building has been entrusted to Mr. Wallace. On Saturday, the 1st inst., an entertainment was given to the workmen and their friends. Mr. Thomas Instone took the chair; Mr. Wallace being vice-chairman.

THE ARCHÆOLOGICAL ASSOCIATION AND THE SAXON CHURCH AT BRADFORD-ON-AVON.

Sir,—Kindly allow me to make a few comments on certain statements volunteered by Mr. C. E. Davis, when he brought his company to see our Saxon church. I will make no remark on the bad taste of his personal attack on me; there were not a few who designated it by harsher names, and only seemed too anxious not to be in any way identified with it.

Taking his own dates, though my own recollections are not quite in harmony with his, I beg to reassert distinctly that two years before the time at which he commenced his reckoning, I had pointed out the church to my worthy parishioner, Mr. George Marks, while we were standing together on Torz, the highest part of our town. He well recollects the circumstance, and is willing to testify to it. We came down from the hill together and examined the building, which I then pronounced to be an ancient church.

Mr. Davis pointed out with exact precision, though memory is proverbially treacherous, the very spot from which he saw the Saxon church when the light gleamed upon him, and twitted me with not having observed it before. Wiser men than he or myself had been familiar for years with Bradford, but, unlike him, we none of us had the faculty of seeing through the obstructing buildings which, till lately, were standing, and obscured the little church on the south side, to which he pointed.

Again he asked why, if I knew of this church, I did not speak of it. In reply, I say I did, in a paper read before the Wiltshire Archæological Society in August, 1857, and printed in the *Bath Chronicle*.

He asks, further, why, as I acted as *cicerone* to the archæologists in August, 1857, I did not point out this ancient church. My reply is, that again his memory is treacherous. For special reasons I did not act in any such capacity; and, even if I had, my services would have been needless, as a heavy rain prevented them visiting the various objects of interest in the town, many of them remaining in the church, the organist playing for their edification several pieces on the organ.

I do not recollect the presence of Mr. Davis at the said archæological meeting in 1857, nor does his name appear in a tolerably long list of those who were present. My words about the Saxon church seem, in any case, to have been unnoticed by him. At all events, they were heard by Mr. George Godwin, who at once went to see it with his own eyes, and in the *Builder*, for August 22nd, 1857, a decisive opinion was given as to the building in question being pre-Norman.

Mr. Davis further mentioned that the architectural details, in my account of the Saxon church, were taken from a manuscript sent by him to me, in September, 1857. So I have again and again stated myself. I have always acknowledged my obligation to him.

At the meeting of the Archæological Institute at Bath, in 1858, when my esteemed friend, Mr. E. A. Freeman, claimed for me the discovery of this ancient church, Mr. Davis replied (I quote from the *Bath Chronicle* of July 28th, 1858),—"He thought he was entitled to take to himself the credit of discovering these remains. *Mr. Jones drew his attention to the arcade*, and he worked out the plan of the church."

I am not in the habit of using words in a non-natural sense, and therefore, by "discovering," I mean the *first finding* of the church, and not the "working out" after it *had been* found. That Mr. Davis helped me to interpret the church, I have always acknowledged; but even here he was not the first in the field, as Mr. Godwin had anticipated him.

W. H. Jones, M.A., F.S.A.,
Prebendary of Salisbury and Vicar of Bradford-on-Avon.

SAVE THE STONES.

Sir,—The scrapings off suburban roads are largely intermixed with useful stones, granite, flints, &c. They are shovelled into carts. Loss of material and cartage of fresh metal make it a serious item in road repairing.

Let there be a declining screen, with a side shoot; the fine dust would fall through into the cart, the stones on to the road. No additional labour would be required; the screen would pay for itself in a few days. R. T.

THE GROWTH OF MIDDLESBROUGH.

There is perhaps no locality in the United Kingdom which has expanded and increased in population with such rapidity, and to the same extent as Middlesbrough, and it appears that the rate of increase continues at the present time, upwards of 1,000 houses having been erected during this year, whilst whole streets of other new dwellings are at the present moment in progress. Besides these several additional blast furnaces are also in course of erection. The total estimated production of pig iron manufactured in Great Britain is about 6,000,000 tons per annum, and of this one-third is said to be manufactured in Middlesbrough alone, to produce which about 140 blast furnaces, and 1,000 puddling furnaces are at work in the district, and the number is constantly increasing. As an evidence of the extraordinary rise and increase of the town, it may be stated that in the year 1830, when Messrs. Joseph & Edward Pease, and the other members of the Society of Friends associated with them, purchased 500 acres of land, and commenced the building of the town, the then village on the south bank of the Tees contained only 130 inhabitants, the chief dwellings in the place being four farm-houses. In 1841 the population had risen to 5,709, increased in 1851 to 7,893. But it was not until 1854 that the expansion of the town began with such extraordinary and unprecedented strides, when the iron manufacture was first developed. It was during this year that the first shipment of pig iron was made, and the iron stone rock, 16 ft. in thickness, being shortly afterwards found in the district, blast furnaces rose rapidly around the mines, and in 1861, the population had increased to 18,273, having considerably more than doubled itself during the ten years from 1851. In the next decade, from 1861 to 1871, the population had again much more than doubled itself, being 39,234, whilst it has been ascertained that its population during the present year 1874 is upwards of 44,000, and that it is now increasing at the rate of 5,000 annually. It may be further stated that the area included within the municipal borough is 2,100 acres, and that about one half of this is already built upon, whilst, as we have already intimated, new houses are in course of erection at the rate of 1,000 yearly. From being a small and obscure village or hamlet, Middlesbrough has, in a comparatively brief period, become one of the most important manufacturing centres in England, possessing its royal exchange, town hall, free library, public park, and other public buildings and places of resort. It has also a large dock, constructed at an outlay of more than 250,000*l.*, together with a steam ferry, and other marine conveniences, and has been constituted a separate and independent port. It is also incorporated, having its mayor and town council; and finally it has, within the last few years, been raised to the dignity of a Parliamentary borough, Mr. Bolckow, who was the first to establish iron works in the locality, being its first and present representative. Middlesbrough has not inaptly been termed the "Iron Metropolis" of England.

THE ROTHESAY AQUARIUM.

For the last few weeks workmen have been engaged preparing the site at the old battery, Rothesay, for the aquarium, and excavating for the reservoirs, which are to be situated beneath the building. As the plans have now been prepared and approved of by the directors, it is expected that in a month or so active building operations will commence. The building, when finished, will have sixteen large show-tanks for containing the larger specimens of marine and fresh-water animals, and twenty small tanks for the smaller specimens. The former are to be ranged along each side of a large corridor running east and west, which forms the main access of the building, and measures 90 ft. by 15 ft., as well as in the passages leading from it. The smaller tanks are to be placed on shelves in two side-rooms, each 24 ft. by 22 ft., and entering off the large hall in the centre of the building. These tanks altogether will contain about 23,000 gallons of sea-water and 9,000 gallons of fresh water, and the water will be made constantly to circulate between them and the reservoirs beneath by means of water-engines and pumps. At the same time atmospheric air will be made to enter to free the water from impurities, and to keep it in a fit state for the support of animal life. There is to be a probationary tank-room and reservoir, with seven tanks for putting specimens into as they are brought to the aquarium, and before they are put into the show-tanks. There is also to be in the front centre of the building a large room, which will be suitable for a *conversazione* or concert-room, measuring 45 ft. by 28 ft., and off this there is a small refreshment-room. The elevation to the sea will have a frontage of 102 ft. in length and 22 ft. in height, with rusticated basement and corners and open balustrade, and have in the centre a tower projecting from the main line of front, and rising a few feet higher, surmounted by a dome. It is expected the building will be opened to the public about a year hence.

THE NEW OFFICES FOR THE LEWISHAM BOARD OF WORKS.

The Lewisham Board of Works are about to erect new offices for the transaction of the business of the Board, the present offices, in Grove-place, being very inconvenient, and not affording accommodation for the members of the Board, and the foundation-stone of the new building, the site of which was purchased from the parish by the Board, for 1,050*l.*, and which is situated at Catford, has been laid. The building, in the Gothic style of architecture, will consist of a Board-room, 46 ft. by 30 ft., with a vaulted wooden ceiling; also two committee-rooms, besides clerk's and assistant clerk's rooms, and other offices. The roof will be covered with tiles, and the building will be surmounted by an ornamental tower and clock. The contract price for the building is 9,784*l.*, and the estimated total cost, including the land and furnishing, is 12,000*l.* Mr. Elkington is the architect; and Messrs. Hill, Higgs, & Hill, are the contractors.

MONUMENTAL.

The Iceland Millenary.—In commemoration of the thousandth anniversary of the colonisation of Iceland, which was celebrated on the 7th inst., the Municipal Council of Copenhagen has voted a grant of 6,000 rigsdalers for a statue to be erected at Reykiavik of the celebrated sculptor, Thorwaldsen, who was of Icelandic descent.

Monument to Carolan in St. Patrick's Cathedral.—A monument has been erected in St. Patrick's Cathedral to the memory of Carolan, the great Irish bard, whose compositions are said to be world famous. Mr. Hogan, the sculptor, and son of the Cork artist, executed the work in Rome. It is now being erected under the personal superintendence of Mr. Hogan. The means for accomplishing this work were bequeathed by the late Lady Morgan, who held the genius of Carolan in high estimation. For some reason the realisation of her wish had to be postponed.

The Brook Memorial at Enderby.—A tribute has been paid to the memory of the late Mr. Chas. Brook, of Enderby Hall, at Enderby, by the unveiling of a memorial statue, subscribed for by the inhabitants of the village and district. The design was gratuitously supplied by Mr. J. B. Everard, architect, Leicester, and has been nearly carried out in detail. The column, which is erected on the green in the enclosure immediately in front of the National schools, has been erected by Messrs. Thrall & Vann, stonemasons, Leicester. The sculptor was Mr. Hessey, of York, the sculptor of the Leicester Clock Tower. It consists first of a square base of Bowl Hill stone, on which rise two octagonal steps of the same material. Above is a similar base of Westmoreland Shap granite "axed," from which rises a polished granite "drum," with moulded cap, bearing in front a simple inscription. On the top of this is a cluster of four columns of white Sicilian marble, in front of which is a full-faced medallion of the late gentleman, cut out of the solid. These columns are capped with conventional foliage, filled in with a series of flowers, intended to typify the virtues of the deceased. The whole is surmounted by another symbolical representation in white marble, consisting of an angel representing "Charity" protecting two figures, the "Sick," and the "Untaught." The base is enclosed by four iron standards, with swing spiked chains. The height of the whole structure is about 15 ft.

Sheffield.—A new workhouse is to be erected at Sheffield, at a cost of from 80,000*l.* to 100,000*l.* The present union is not large enough to accommodate the paupers.

THE ARCHITECTURAL ASSOCIATION EXCURSION TO FRANCE.

On Monday next the excursion party will commence their work. Some of our readers will feel an interest in reading the official sanction, and noticing the assistance, offered by the authorities in France to this unique expedition. We therefore give (in the original) the document which evidently bears all the marks of much goodwill towards the excellent conductor of the excursion, and the young English architects who will travel under his guidance:—

"Paris, le 20 Juillet, 1874.

Monsieur,—Vous avez bien voulu réclamer l'intervention de mon Administration à l'occasion d'une excursion que vous vous proposez de faire en France, avec un certain nombre de membres de l'Architectural Association of London, pour visiter nos monuments archéologiques des départements du Centre et du Nord.

J'ai l'honneur de vous informer que j'ai donné avis de ce projet d'excursion à MM. les Préfets de l'Oise, de Seine et Oise, de la Seine Inférieure, d'Eure et Loir, de l'Eure, de l'Aisne, et de la Marne, en les invitant à prévenir les autorités locales de chacune des villes qui doivent être visitées par votre Société.

Si vous désiriez que les architectes ou conservateurs de quelques monuments pussent être mis à votre disposition, il [vous suffirait d'annoncer le jour de votre visite au Préfet de chaque département. Ces fonctionnaires seront heureux, je n'en doute pas, de prêter leurs concours aux études de l'Architectural Association of London.

Agréez, Monsieur, l'assurance de ma consideration la plus distinguée.

Le Ministre de l'Intérieur.

Pour le Ministre:—

Chabaud Latour,

Le Préfet de Police, chargé de la Direction générale de la Sûreté publique.

Monsieur Edmund Sharpe, à Lancaster, Angleterre."

PURIFICATION OF SEWAGE.

The first general half-yearly meeting of the Clarifying and Utilisation of Sewage Company (Limited) has been held at the Victoria Hotel, Leeds; Mr. Horsfall in the chair. In the chairman's report he stated that,—

"Since the last meeting of the shareholders the directors had been able to materially strengthen the position of the company, by arranging terms for the purchase of Messrs. Marsden & Collins's letters patent for purifying sewage. The experiments at Knostrop in treating upwards of twelve millions of gallons of the Leeds sewage had been successfully carried out, under the management of Mr. Goodall, and to the satisfaction of several deputations from sanitary authorities in various parts of the country. The company's process is in work at several mills, and also at the Corporation works at Bolton, Lancashire. The directors having agreed with the Sewage Committee of the borough of Leeds to open the new works at Knostrop, and to treat the whole of the Leeds sewage, amounting to about 7,500,000 gallons per day, for a period of three months, they hope to have the system in full operation there during the present month."

The chairman concluded by congratulating the company upon the success of the recent experiments in dealing with some of the worst sewage in the kingdom. It had not only been thoroughly and economically purified, but the work had been carried out without creating the least smell or nuisance of any kind. After an analysis of a sample of effluent water from Bolton Corporation, Dr. Voelcker pronounced it to be the most successfully treated sewage that had been submitted to him.

EXHIBITION OF THE ART-UNION PRIZES.

The private view of this exhibition took place in the galllery of the Institute of Water Colours, on Monday, and, considering the yearly increasing difficulty of finding good pictures in the public galleries unsold, the general character of the works in this collection speaks well for the judgment of those who have acquired the right of selecting for themselves something from the Royal Academy, or other gallery, which will be paid for by the Art-Union. There are some landscapes by Percy, De Breanski, Cameron, Panton, Adams, and others, worthy of a place in any collection of modern art. G. Stanfield, "Angers," has a good deal of his father's feeling; but the extreme hardness of outline militates somewhat against aërial perspective. "Checkmate," by Vinter, is solidly painted—the roughness of costume perhaps a little exaggerated. Mr. Cope's "Hush thee, my Baby," will be better when time has somewhat subdued the, at present, rather too powerful colour. There are some charming little bits which show that good work can be got at even so low a price as 10*l.*,—no doubt many of them very useful stepping-stones to young beginners in art. Not improbably also many of the works here seen will be the first steps leading to a taste for buying, and, perhaps, result in the possession of a valuable investment, which a collection of pictures judiciously purchased now most undoubtedly is.

In the small room at the end of the gallery is placed a very clever copy in oil, by Mr. Arthur Stocks, of Maclise's wall-painting in the Palace of Westminster,—"Wellington and Blucher meeting after Waterloo." This great work gave Mr. Maclise six years of incessant labour. The number of figures, both of men and horses,—the infinite detail in the various uniforms, weapons, musical instruments, and ornaments,—for all of which the artist, at the cost of much search, collected a large store of sketches,—give evidence of an amount of study and persevering diligence which we do not often see bestowed on one work in the present day.

In the gallery will be found a proof of the plate engraved by Mr. Stock, R.A., from the above picture, which plate, in the words of the Society's last report, "is no less excellent in its own department than the original. The skilful laying in of the lines, the bold and smooth sweep of the graver, producing a roundness and solidity of effect, a most striking contrast of light and shade, which leave nothing to be desired. The Council have every reason to believe that this truly national work, commemorating one of the great triumphs of British arms, a work which every subscriber will feel proud of having on his wall, will induce a very large subscription for the coming year. To do justice to this important work, the Council did not hesitate in paying the engraver the large sum of 3,150*l.*"

LIBELLING AN EX-SURVEYOR.

At the Stafford Assizes, Mr. Wm. Malkin, of Cheadle, near Leek, and formerly surveyor of highways for that township, brought an action to recover damages for injury to his character by the publication of libellous letters in the *Leek Times* by Mr. Robert Plant, also of Cheadle. The alleged libellous letters contained the following:—"I hear on good authority, but will not vouch for its correctness, that our old surveyor (Mr. Malkin) so clings to his old selfish actions that he is now spending public money near his own house in alterations;" and the following:—"When these very loose, mean, paltry, low, shabby, disgraceful, base, and unmanly acts, try to reign so predominant over the public good, I cannot refrain from bringing them to light.

Oh, if I had the power
To crush my native foe,
I would not hurt one hair,
Because t'would vex him so.
I do not wish him harm,
If he would hold his peace;
But when he would the public grind,
I can but try to make him cease."

Mr. Huddlestone, the counsel for the plaintiff, said the defendant had held the plaintiff up to contempt and ridicule, besides attributing to him improper acts. The plaintiff required a full apology.

The reply to the charge was that though the letters complained of were disagreeable they were substantially true. These letters charged Mr. Malkin, not with anything that could reflect upon his character or honour, but with one-sided expenditure of the public funds.

The defendant was examined. He said he bore no ill-will to Mr. Malkin, and that the letters were inserted for the public good. The "poetry" was his own.

His lordship, in summing up, said that the defendant used a number of epithets which the learned counsel for the defence said were only expressive of what was a fact. That would be for the jury to decide.

The jury almost immediately found a verdict for the plaintiff; damages 50*l.*

THE COST OF A REREDOS.

EARP *v.* ROYDS.

This case was tried at Salford Hundred Summer Assizes. The plaintiff is a sculptor, and the defendant a gentleman residing in Falinge, near Rochdale. The action was for work done. In 1868 a movement was started for the erection of a new church in Falinge, the cost to be defrayed by public subscription, and a committee having been formed, Mr. Gilbert, the clergyman of the parish, called on Mr. Medland Taylor, an architect in Manchester, and spoke to him about the preparation of the plans. Nothing further was done until 1869, when the defendant announced his intention to build the church at his own expense, and present it to the district. Mr. Taylor then prepared the plans, and after he had submitted them to the defendant, and discussed them with him, the defendant said he was willing to spend 100*l.* on a pulpit, and about 300*l.* on a reredos. Mr. Taylor made a drawing of a reredos, and asked the plaintiff for an estimate of the cost. The plaintiff gave him an estimate for 300*l.*, and Mr. Taylor having submitted the plan and estimate to the defendant and obtained his approval of them, the order for the reredos was given to the plaintiff, who executed it. The defendant subsequently took the building of the church into his own hands, and had it carried on by builders; but when the plaintiff sent in his account for the reredos the defendant refused to pay it, saying that he had not given the order.

Mr. Medland Taylor, the architect, was examined, and stated that the defendant had approved of the plan of the reredos in question, and had authorised him to get it made. On cross-examination by Mr. Addison, he said the defendant had never told him that it would not do. He gave some directions with regard to the subject of the sculpture, of which witness made a memorandum, and with that exception the plan was approved of by him.

Mr. Albert H. Royds, the defendant, was examined, and stated that he had not approved of the plan of the reredos, nor authorised any order being given for it. On the contrary, when Mr. Taylor showed him the plan, he said it was a marble chimney-piece, and he would not have such a thing if it was given to him. He said if he put up anything of a reredos it should have upon it the Lord's Prayer, the Ten Commandments, and the Belief.

Cross-examined by Mr. Herschell: You objected to it because it was not Protestant enough. Show me the part that is not sufficiently Protestant.

Witness: I will show you nothing of the kind. I objected to the whole thing. I wanted the four tables and nothing else.

The jury returned a verdict for the plaintiff for 300*l.*, and Mr. Earp to keep the reredos.

BUILDERS' TENDERS.

JAMES *v.* YATMAN.

Sir,—This case, which was got up for the purpose of getting a clearly-defined principle as to compensation for unnecessary trouble given to builders, disclosed what I trust is an anomaly in competitions. When a limited number of persons agree to compete for a job, it is always on the implied condition that they know with whom they compete; that the tenders are all opened at the same time (generally in the presence of the competitors), the amounts at once declared, and the lowest tender (if any) accepted. In this case, Messrs. Jones & Allen, of Gloucester, and myself, although totally unknown to each other, happened to adopt precisely the same course. We were both invited to tender, both wrote to Mr. Thomas to know the names of those asked to compete, both received a similar reply that the competition was limited to Mr. John Daymand, of London, and ourselves (three in all). After the tenders were opened we each of us received somewhat similar letters, with a list of figures, headed:—

Highest Tenders:—

£1,989	0 0
1,813	10 0
1,666	0 0
1,656	0 0

We again both of us naturally wrote to know the names of the competitors, and were furnished as follows:—John Daymand, London; W. H. James, Cirencester; A. Estcourt, Gloucester; Jones & Allen, Gloucester. Messrs. Jones & Allen were in addition informed that Mr. Estcourt was accepted, and that Mr. Biggs, of London, had sent an estimate, which was not included, from being too late.

Mr. Jones smelt a rat, and although his tender was 1,666*l.* instead of 1,656*l.*, as the sequence of figures and names made it appear, had reason to believe that his tender was the lowest, and sent in a claim of 45*l.* 1s., for preparing his estimate. He was offered 20*l.*, which from the difficulty he foresaw in proving what he believed were the facts, he accepted as a compromise. At the trial Mr. Estcourt honestly produced his tender, and proclaimed the amount to be 1,756*l.* The list of tenders should therefore have been:—

Daymand, London	£1,989	0	0
W. H. James	1,813	10	0
Estcourt	1,756	0	0
Jones & Allen	1,666	0	0

The last three I know to be correct, but as to the first we have no evidence except that of Mr. Thomas, as no such name appears in the Directory.

Some animus was created towards me from my being obliged to explain to Mr. Yatman that the first set of plans were in many places manifestly incorrect, the amount of foundation unnecessary, the design of the roofs absurd, unscientific, and weak, and the construction of a conservatory as shown utterly impracticable. Mr. Yatman candidly admitted the truth of my remarks, and Mr. Thomas virtually acknowledged them by at once altering or abandoning the matters alluded to. The plans I speak of were not I think seen by any builder but myself, and are perhaps now destroyed. I, however, have copies.

W. Henry James.

THE SURREY ARCHÆOLOGICAL SOCIETY.

The annual excursion of this Society was held on the 5th inst., under the presidency of Mr. W. Wainwright, J.P. The members and their friends assembled at the Woking Railway Station at 11 a.m., where from twenty to thirty vehicles were in waiting, and conveyed them to Woking Church, which was described by Mr. Ralph Nevill, F.S.A. The essayist commenced by giving the earliest known accounts of the edifice. The present building may be chiefly designated Early English. The tower, screen, and piscina in the south aisle he should date from 1330 to 1350. The font and chancel walls were Early English. The company then dispersed to examine the windows, brasses, font, and other details referred to by the essayist; the massive doors at the west end, and the quaint wrought-iron hinges on the same, particularly attracted attention. These hinges are referred to in "Parker's Glossary." *Apropos* of the hinges, Parker says:—"No hinges of earlier date than the Norman style can be referred to, and they are not often met with so old; they are to be found on the inner west door at Woking Church, Surrey, and at Compton, Berks. At this period they have not, in general, much scrollwork attached to them, and the turns are often very stiff; the principal branches at the head of the hinge frequently represent the letter C." A short walk brought the members and visitors to the site of the Old Hall, at Park Farm, where a descriptive paper was read to them by Mr. Godwin Austen. The ancient manorial residence of Woking, now a farm, was a royal manor from the time of King Edward the Confessor to that of Richard Cœur de Lion, who gave it away.

At Pyrford, Mr. T. Graham Jackson, M.A., made some interesting remarks on the church, which has recently undergone restoration, and during this process the remains of some wall-

paintings were discovered beneath the many coatings of whitewash, and which they had done their best to preserve.

Mr. J. G. Waller then made a few observations on the remains of the wall-paintings, and regretted the scarcity of them would not enable him to give any clue as to the meaning of the original design.

At Hoe-place, Mr. Godwin Austen gave a sketch of the history of the mansion in connexion with that of Woking Palace and Park. The painted staircase and chamber, which he also described, and said were of the same period as the paintings at the Hampton Court Palace, and probably painted by the same artists, afforded much pleasure to the visitors.

A collation, most hospitably provided by the president, Mr. William Wainwright, made all happy.

THE MARGATE DRAINAGE.

At the meeting of the council on Tuesday, Sir Joseph Bazalgette's report on the drainage plans was read. Sir Joseph entered at some length into the merits of two of the schemes, — those signed "Economy" and "C. E.,"—but suggested certain alterations in both schemes. He expressed the opinion that the drainage would cost 35,000*l*. The report was referred to the committee to report upon. The Council have since declined, without some further explanation, to accept the award of Sir Joseph Bazalgette, the referee. They complain that the 6th "condition" of the competition issued to the competing engineers appears to be wholly lost sight of by the referee; and the local *Gazette* remarks that the first clause of the "requirements" as to providing a complete plan for the drainage of the whole of the borough appears to be lost sight of in the first plan selected for premiation; and that the referee gives the first premium to the gravitation scheme of "Economy," which does not fulfil, according to the opinion of the referee, the principal condition of the competition in reference to the estimated cost, and if carried out according to the scheme submitted, would have proved a failure affecting the prosperity and finances of the town. Our local contemporary, however, remarks that it should not be forgotten that it is the award of a gentleman of the highest eminence in his profession, far above the influence of any personal consideration, and as such it would no doubt be agreeably accepted by the competitors. Sir Joseph, in his report, states that this locality is not favourable to irrigation; but the *Gazette* reminds the Council that,—

"The author of the plan 'C.E.' introduced as part of his scheme, 'irrigation' in a form which entirely obviated the nuisance of ordinary sewage farms. He intended to pump the sewage from a point in the Dane over the hills to the outfall at Botany Bay. By this plan the pipes passing through the elevated agricultural district of Northdown would be easily available for irrigating the land at any season of the year when required by the farmer, and at other times when not so required it could be discharged into the sea. The determination of the Council to discharge the whole of the sewage into the sea after the plans were received has doubtless made it necessary for 'C.E.' to modify this part of his scheme, and which as a matter of course would reduce very considerably his original estimate for pumping."

THE NEW MUNICIPAL BUILDINGS, LEICESTER.

The public ceremony of laying the memorial stone of the new municipal buildings in course of erection in Horsefair-street, Leicester, has been performed by the mayor, Mr. W. Kempson, on the last Bank Holiday, but the whole line of route, says the local *Advertiser*, was conspicuous for its scarce show of flags. The route of the procession was, however, crowded with a large body of spectators, who seemed to take evident interest in the proceedings.

The architect, Mr. F. J. Hames, a young townsman now resident in London, who was formerly a pupil of Mr. Millican, in his design for the municipal buildings, has endeavoured to produce a design which can be fully carried out for the 30,000*l*. decided upon by the town council, and one traditional in character rather than strictly in adherence to style; yet traces will be seen of work of the time of Queen Anne and the Hôtel de Ville of France. A clock-tower will be placed over the municipal entrance, and will be visible from Gallowtree-gate, and in a position useful to surrounding streets. The law department of the structure will be provided with two courts, judges' retiring-room, barristers' retiring-room, barristers' consultation-room, magistrates' retiring-room, grand jury retiring-room, petty jury retiring-room, clerks' room, witness room, male and female witnesses' room, witness gallery, public hall, and two entrances, the one for the public in the centre of the new street, and the other called the law offices for judges, magistrates, and counsel. It is said the arrangements for the Bar, jury, reporters, witnesses, the public, and the dock have been planned from an inspection of the most convenient law courts of England, while the courts are well lighted, ventilated, and heated.

Passing on to the Municipal Department, the principal entrance will be from the corner of Horsefair-street and the new street; and a councillors' entrance will be provided in Bowling-green-street. In this section of the buildings will be placed the Mayor's private room, the Mayor's parlour, councillors' cloak-room, council-chamber, committee-room, town-clerk's offices, strong-room, town-clerk's general office, School Board rooms, borough surveyor's offices, accountant's offices, strong-room, pay-room, labourers' waiting-room, hall-porter's office, hall-keeper's rooms, kitchen, and a number of spare rooms and offices.

In the Police Department, the entrance will be from Bishop-street, and the section will be allotted to the head constable's house, charge office on ground floor, inspectors' room, muster room, stores, drying-closet, cells, parade-ground of 760 square yards, with spacious drill-sheds next Bowling-green-street, fire-offices, heating chamber, &c.

Hydrants are to be placed in all the principal corridors to be ready in case of fire; and the three departments are thoroughly connected in the most direct manner by corridors. The main entrance is from the new street which is to be formed between Bishop-street and Horsefair-street, and which the building will front. Mr. W. Brass, of London, has contracted for the buildings, at an estimated cost of 31,285*l*., with the addition of 650*l*. for Ketton stone.

KENT ARCHÆOLOGICAL SOCIETY.

The members of the Kent Archæological Society met at Folkestone. The proceedings of the opening day were, in every respect, attended by complete success. The greater part of the meeting was gone through in the open air upon the site of some ancient remains, or in the neighbourhood of some old Norman church, and the weather was everything that could be desired. The proceedings opened by the inspection of a temporary museum in one of the rooms at the Town Hall. Around the walls were a number of rubbings from monumental brasses. The museum also contained a fresco from the choir of Rochester Cathedral of the fourteenth century, a number of casts from seals, Roman utensils, tiles and vases, a number of manuscript and old English books, curious jugs and candlesticks in ancient ware, old engravings, tapestries, &c. A short preliminary meeting was held under the presidency of Earl Amherst, and a move was then made to the carriages, some twenty in number. The company, which numbered about 150, included Earl Amherst, Sir Walter Stirling, Sir Walter James, the Rev. Canon Scott-Robertson (hon. secretary), and a number of other clergymen and gentlemen, together with several ladies. The party proceeded by way of the Canterbury-road to the Ancient British Camp, commonly called Cæsar's Camp. Arrived at the top of the hill, Mr. W. J. Jeaffreson read an interesting paper on the subject of the camp.

The party then proceeded to Paddlesworth Church, and afterwards to Folkestone Church, where a paper by the Rev. Scott-Robinson, the hon. sec., relating to the history of the edifice was read by the vicar, the Rev. M. Woodward. Dinner was taken at the Town-hall, Lord Amherst, presiding, and there was a meeting in the evening in the Council Chamber, the mayor presiding. Canon Jenkins read a paper of Gossip from the Municipal Records of Folkestone, which was followed by others.

On the next day the party went to Horton Priory, which was described by Mr. C. Bailey, F.R.I.B.A.

Progress was thence made to Elham Church, which was described by the vicar, the Rev. Walker Wodehouse. The remarkable discoveries at Lyminge Church recently made by Canon Jenkins, and fully described by him in "Archæologia Cantiana" (vol. ix.), were next inspected under his able guidance. From Lyminge the Society proceeded to Monks Horton Park, and there partook of the hospitality of Major Kirkpatrick. Subsequently a visit was made to the Norman church of Brabourne, the architecture of which Sir G. Gilbert Scott described. The history of the Scott family, whose tombs form a feature of this church, were also described by Mr. J. R. Scott. Upon returning to Westenhanger station, the interesting remains of Westenhanger Castle were inspected, and this brought the annual meeting of the Society to a successful termination.

VARIORUM.

"The Land Improver's Pocket Book, by John Ewart" (Lockwood & Son), contains in a small space a large number of formulæ, tables, and memoranda useful to land-agents and agricultural engineers. —— Professor Gruner writes in the *Art Journal*, concerning Italian mosaics:—"Towards the end of the seventeenth century the Roman class of mosaic, that is, with small pins of coloured paste, was introduced by P. P. Christoforis, who established a school in Rome, for the use of which he created 10,000 various shades, which enabled him to imitate the most delicate tints of the original pictures. From this school emanated the best mosaic pictures which adorn the altar of St. Peter at Rome. Nearer our time there was a similar school formed by Professor Giacomo Raffaelli, at Milan, who himself executed that exquisite copy of Leonardo da Vinci's 'Last Supper,' of the size of the original. Hitherto—with the exception of the works in *opus alexandrinum*, which were composed of small dies of hard stones such as serpentine and porphyry, used along with white marble, and of which an endless variety of charming patterns is found on the floors of the Roman *basilicæ* and at Venice—human figures predominated; but there exists that other kind of mosaic which is almost exclusively used for pieces of furniture, such as tables, cabinets, and in smaller objects for jewelry: this is the Florentine mosaic, composed of precious stones and pearls, of which kind our collection preserves fine specimens. This mosaic differs from the ancient and modern Roman one in so far as here the flowers, fruits, birds, &c., are not composed of small pins of coloured glass or paste, but of most carefully selected precious stones, each one forming a whole portion of the picture; these are set in black marble, and joined in so close a manner that it is difficult to find where the pieces meet. This kind of work was in great use in India during the seventeenth century, and it was supposed that it was of Indian invention; but the fact is, that the Great Mogul Akbar had invited Florentine mosaicists to exercise their art in his service." —— Mr. E. Ellice Clark, C.E., says, in *Public Health*,—"We hope the day is not far distant when in all our national schools health will form a subject to be treated, just as geography and grammar are now. The universities, and a few of the higher-class colleges, have their professors of public health; but in what profession these gentlemen have been educated we know not. The medical schools of the day do not give the necessary qualifications for such positions. There is a vast deal of special knowledge required beyond that obtained by a course at a hospital, to which we shall hereafter refer; but, possess what qualifications these gentlemen may, it is a great accomplished fact to see them taking their positions with the teachers of mathematics and political economy. Amongst the other signs of the times, showing that the legislation on this question has produced a marked effect, is the tone taken by the press throughout the country, which is daily following in the steps of those two sanitary pioneers, the *Lancet* and the *Builder*. The medical profession, particularly, has advocated the prevention as being an equally important subject as the cure of disease, showing a self-sacrificing honesty and humanity that cannot be too highly praised. Altogether, the results of the Health Acts up to this date have been as good, if not better, than was expected; but, so far, they have been but experimentally; the time has now arrived when the whole of the Acts must be consolidated into one general statute. The long experience of years has shown that the existing regulations are unwieldly, and carried out with an immense amount of difficulty, more especially in the small country towns."

Miscellanea.

Fire-proof Wood.—Some experiments of an interesting nature have been made at Godstone with the Rev. Dr. Jones's patent for rendering wood incombustible. The experiments took place in the grounds of Mr. Jarvis, at the Priory. Dr. Jones renders wood uninflammable, and also impervious to dry rot and decay, by subjecting it to a "pickling" process in a solution of tungstate of soda and water of the specific gravity of 1·2. The tungstate produces in the process as much chloride of lime as will pay all working expenses. As instances of the inflammable nature of preserved wood were mentioned the landing-stage at Liverpool recently burnt down, and Sir Joseph Gabriel's preserved wood warehouse, which was destroyed by fire. The tungstate of soda is proved, it is said, to render soft woods, such as white and yellow pine, as hard as oak or teak, and also restore wood to its original condition of durability that has been affected by dry rot. The visitors were shown a piece of restored oak taken from the Lord Clyde, an iron-clad that was built some years ago of unseasoned timber, and which had become soft and useless. Having been treated with Dr. Jones's patent, it is now said to be as hard and durable as ever. The experiments made were three in number, and the tests were severe. A chest containing a parchment document had been treated by the process, and was thrown into the flames when at their height, and was taken out some time afterwards, charred outside, but practically uninjured in any other respect. The wax seals upon the document were intact. A paper packet containing about two ounces of gunpowder, was put in the bottom of a Government gunpowder keg, and a sheet of brown paper, impregnated with the tungstate, was pasted over it, and dried. The keg, which was open at the top, was turned upside down, and surrounded by shavings, which were lighted. A fire of petroleum and shavings was kept burning on the top for about a quarter of an hour without producing the slightest effect on the keg. The gunpowder was then taken out and exploded. Some years ago, we think, ballet dresses and curtains were rendered incombustible by tungstate of soda.

The Cracking of Stove-backs.—At the National Association of Stove Manufacturers, held at Albany, U.S., Mr. W. Keep, of Troy, read a paper, in which he pointed out as a cause of the cracking of stove-grates, that iron poured into a mould, on changing from a liquid to a solid state, becomes a mass of crystals, and that the lines about which the crystals assemble are perpendicular to the surfaces of the casting. In making patterns for whatever kind of castings, the greatest care should be taken to avoid all angles, of whatever size or shape, for every change of form brings its corresponding lines of weakness. If curves are necessary, the larger they are the better. Many of the catastrophes which result from the falling of bridges, or of buildings, might be avoided if this matter had received proper consideration. On the other hand, subsequent heating or strain may crystallise iron. The arrival of many iron-masted vessels at Melbourne with broken masts is a remarkable circumstance which appears to be exciting some interest at present. This frequent breakage is attributed by Mr. W. T. Dove, of the Yarra Iron Shipbuilding and Boiler Works, to crystallisation from heating and strain of the masts, which are bound at the deck; and the great lever power above, with the working of the ship, causes a continual jar and vibration in the mast, so that in time the iron becomes crystallised, and eventually breaks. He suggests as a remedy that a flanged ring in two halves should be bolted round the mast, one above the deck, and the other below, with a casing or lining of indiarubber, so as to allow the mast to have a little play, and prevent the jarring of the mast when wedged tight.

Ecclesiastical Ruins in Ireland. — In reply to Lord Carlingford, Earl Beauchamp said he considered that the duty of preserving these ruins required a large amount of architectural skill. He thought that it was best the buildings should simply be preserved in their integrity, and the duty of preserving them could be best discharged by a surveyor; but if anything should arise rendering it necessary to call in the assistance of any person the Board of Works would seek the best advice that could be obtained. Lord Carlingford said he wished to avoid the appointment of an architect, preferring an archæologist.

Metropolitan Gas Supply.—A public meeting of ratepayers and residents in Lambeth has been held in the Vestry-hall, Kennington-road, under the auspices of the South London Gas Consumers' Protection Society, to consider a plan the Society had recently submitted to the Board of Trade for securing an equitable and substantial redress of gas-consumers' grievances. Mr. F. Fowler, of the Metropolitan Board of Works, was called to the chair, and, in opening the proceedings, he referred to the fact that the cost of the gas supply of the metropolis was 2,500,000*l.* sterling, or an eighth of its total rateable value. How to solve this gas problem had become one of the questions of the day, and he hoped meetings of this description would help to discover the solution. Mr. N. Earle, the author of the plan, entered into a long explanation of its principle and details. If there were a proper supervising tribunal, he said, such as he proposed, gas would be laid on at 3s. to 3s. 6d., or even less, per thousand, without at all endangering dividends. Mr. Taunton moved, and Mr. Kirby seconded, a resolution to the effect that

"Inasmuch as the meeting was of opinion that it was not desirable for the Government to purchase the works of the gas companies, nor for the local authorities to become gas-makers, it thought the plan now proposed, and which had recently been submitted to the President of the Board of Trade, was calculated equitably and fairly to remove the grievances complained of."

To this an amendment was interposed as follows:—

"That, while thanking the Society for bringing this important subject before the inhabitants of Lambeth, this meeting, after hearing the details of the plan presented to the Board of Trade, is of opinion the action of the Metropolitan Board of Works on the question is worthy of approval and support."

The Chairman explained the position the Board of Works had taken up. The Board wished to see an arrangement come to by which the 10 per cent. monopoly should cease, a price and dividend should be agreed upon, and the latter should only be allowed to rise as the former fell. If some such settlement as that could not be agreed upon, there was no other alternative but for the Board to take the gas supply into its own hands. Upon a show of hands, the amendment was carried.

Brighouse.—The Bishop of Ripon has consecrated the new cemetery at Brighouse. The cemetery is situated in Lightcliffe-road, and contains an area of about nine acres. The frontage towards the road is enclosed with a stone wall, and light ornamental wrought-iron railing. The entrance, which is about the centre of the frontage, is formed with stone piers, and gates to match the railings. From the entrance a gravelled road, 18 ft. wide, leads past the lodge to the chapels, and thence to the opposite end of the ground, where it is joined by subsidiary walks, as also at other points, especially near the chapels. There are beds filled with shrubs, trees, and plants. The boundaries are formed on all sides of stone walls. The buildings include a lodge and the chapels. The former is situated on the left-hand side of the entrance, and is a plain building in the Domestic Gothic style of architecture. It contains a board-room. The chapels are placed at the summit of a natural eminence in the midst of the cemetery, and form a simple group of buildings in the Early Decorated style. They are connected by a tower and spire with an archway thereunder. The laying out of the grounds and the planting have been designed by Mr. William Gay, of Bradford, surveyor and landscape gardener; and have been carried out by Mr. Lister Kershaw, of Brighouse, nurseryman and gardener. The whole of the buildings and boundary-walls were designed by Mr. F. Bartram Payton, of Bradford, architect and surveyor, and, with the exception of the woodwork, have been carried out under his superintendence. The total cost, including the price of the land and all incidental expenses, is little more than 7,000*l.*

London and County Banking Company. The report just now adopted at the half-yearly general meeting says that, "after paying interest to customers and all charges, allowing for rebate, and making provision for bad and doubtful debts, the net profits amount to 125,830*l.* 16s. 1d. This sum, added to 23,917*l.* 13s. 3d. brought forward from the last account, produces a total of 149,748*l.* 9s. 4d. They have declared a dividend for the half-year at the rate of 20 per cent. per annum, which will absorb 120,000*l.*, and after reserving 468*l.* 15s. to meet interest accrued on new shares, there remains a balance of 29,279*l.* 14s. 4d. to be carried forward to profit and loss new account."

Hampstead Parish Church.—The trustees of this church have received a petition from gentlemen resident in, or acquainted with, the suburb of Hampstead, who state that they have learned with regret that it is proposed to destroy the tower and the east end of the parish church. "The church in question," they add, "is the only public building of any antiquity which Hampstead possesses, and we should seriously deplore the removal of so well-known a monument of the past. Apart from the question of the intrinsic merits of rival styles of architecture, this building derives a special benefit from its intimate association with the peculiar charm of the locality, and from its position as the central feature of a street of old buildings of great and characteristic interest. Such a group of English architecture of its period is almost unique in or about London, and the proposal to destroy or to transform its principal ornament will be condemned by every man of taste. Whatever may be the practical conditions which have suggested this scheme, there are obviously many plans by which the requirements of the parish may be met which do not involve an outrage upon the familiar sentiment and aspect of a well-known locality."

The Kirkintilloch and Lenzie Waterworks.—These waterworks have been opened. The works in connexion with the scheme include the construction of a fire-clay aqueduct, the diversion of hill streams, and the formation of inlet wells for receiving these and the water of the Woodburn, a storage tank of 180,000 gallons effective capacity, and valve well. An impounding reservoir and filter-beds have been dispensed with meanwhile. The Drumairn water is said to be very pure. That from Corrieburn is reckoned inferior to it. The supply is regulated in the valve well, and is conveyed in an 8-in. main to Kirkintilloch, and thence to Lenzie by a 6-in. pipe, the total length of pipes laid exceeding ten miles. Pillar and wall wells are placed throughout Kirkintilloch in convenient positions. In Lenzie, the supply will be from service-pipes. The cost of the scheme complete is about 2*l.* per head for a population of 7,000. The whole of the works have been designed by and carried out under the instructions of Messrs. Storry & Smith, C.E., Glasgow; the contractors being Messrs. D. Y. Stewart & Co. and Mr. J. A. King.

Laying the Foundation-stone of the new Metropolitan Sick Asylum. — The ceremony of laying the foundation-stone of the new asylum for the Central London Sick Asylum District, on the site of the old Strand Union in Cleveland-street, has been performed by Sir S. H. Waterlow, bart., the Chairman of the Central London Sick Asylum Board, in the presence of the members of that body, the county magistracy, and others. The Local Government Board having, in the face of strong opposition on the part of the parishes forming the district, determined on appropriating the site of the old Strand Union Workhouse in Cleveland-street as a supplementary asylum to that of the Highgate Infirmary, the managers were called upon to find space for 272 beds. It was at first supposed that this would entail a cost of 12,000*l.*; but the contract for the buildings about to be erected has reached 16,000*l.* They are to consist of two large wings of three stories, without ornamentation, but they are to be fitted up in every respect with modern hospital requisites upon precisely similar plans to those of the Highgate Infirmary.

London and Middlesex Archæological Association.—On Tuesday last the London and Middlesex Archæological Association, made an excursion by special steamer up the river, and held a general meeting in Fulham Palace, the Right Rev. the Bishop of London, the patron of the society, in the chair. The meeting was held in the hall of the palace, which, as an inscription over the chimney-piece states, was erected, as well as the adjoining courtyard, by Bishop Fitzjames, in the reign of Henry VII., on the site of the old palace, which was as old as the Conquest. It was used as a hall by Bishop Bonner and Bishop Ridley during the struggles of the Reformation, and retained its original proportions till it was altered by Bishop Sherlock in the reign of George II. Bishop Howley, in the reign of George IV., changed it into a private unconsecrated chapel, but it was restored to its original purposes as a hall on the erection, by Bishop Tait, now the Archbishop of Canterbury, of a new chapel of more suitable dimensions. Several papers were read.

New Act on Slaughter-houses.—An Act of Parliament, passed in the last day of the session, has just been issued to regulate and otherwise deal with slaughter-houses and other businesses in the metropolis. If any person establishes anew the business of a blood-boiler, bone-boiler, manure manufacturer, tallow-melter, or knacker, he is to incur a penalty not exceeding 50*l.*; and if any person carries on the same a like penalty for every day. If any person establishes anew, without the consent of the local authority, the business of a fellmonger, tripe-boiler, or slaughterer of cattle, or any other business which the local authority may declare by order confirmed by the Local Government Board to be "offensive," he, as well as the person carrying it on, to be liable to similar penalties. Bye-laws are to be made and legal proceedings taken in Courts of Summary Jurisdiction. The law is amended as to renewal of licences for slaughter-houses in the metropolis. Notice must be given of such applications, as also of objections. A business is to be deemed to be established anew if removal to other premises, or discontinued for nine months, but not of a rebuilding in the same area. The Act is now in force.

Proposed Sea Baths on Brighton Beach. At the quarterly meeting of the Town Council, the Works Committee brought up a special report upon an application made by Mr. John Gurr, of London, for the consent of the Council to a Company to erect sea-baths upon the beach between the Chain Pier and Grafton-street, where the public could bathe in safety and comfort in any weather, and at all seasons. A part of the proposal is to form a terrace on the crown of the baths, supplied with seats and thrown open to the public; the water for the baths themselves to be changed daily, and the temperature regulated according to the season. The proposed company asked the Corporation to grant the site at such a rental, and with as few restrictions, as would make it possible to carry out their views. The Borough Surveyor (Mr. P. C. Lockwood) reported that the plan was a practicable one, but recommended that the council should retain the option of purchasing the works within four or five years; and that a limit should be fixed to the charges upon the scale provided by the Baths and Washhouses Act. Conditionally the concession was granted.

The Ruins in Iona.—The condition of these interesting ruins has for some time past been engaging the attention of the Duke of Argyll. Last year, on the invitation of his Grace, Mr. R. Anderson, architect, Edinburgh, visited the island, and, after careful examination, drew up a report, in which he offered various suggestions for the repair and partial restoration of the buildings. On digging into the mounds at the foot of the walls, Mr. Anderson found several relics of ancient sculpture, and characteristic features of the old cathedral. He recommended the mounds to be opened up, clearing the ground and recovering materials to employ in making good defects in the cathedral walls. It seems that repairs are specially required in the west gable and in the chapter-house; the vault is thrusting out the walls. As to the cloisters, Mr. Anderson believes that a great deal of the original stonework could be recovered from the rubbish heaps. The foundations in various places require to be underpinned. Mr. Anderson has received from the Duke a general commission to commence operations.

The Charing-cross Improvement. — The first disputed claim for compensation for freehold property required by the Board of Works, for the new approach to the Victoria Embankment, was tried before a jury at the Guildhall, Westminster, on Saturday last. The premises in question consisted of the freehold house, known as No. 1, Charing-cross, adjoining Northumberland House, occupying a ground area of about 240 superficial feet, let on lease to Mr. Box at 140*l.* a-year. Messrs. Fuller, of Bucklersbury, had sent in a claim to the Board on behalf of Mr. Bird, the freeholder, for 5,000*l.*, exclusive of the usual per-centage allowed for compulsory sale, and in consequence of the Board only offering 3,500*l.* for the same, the case had to be contested. There were numerous witnesses called on both sides. Mr. Clark and Mr. Glasier supported Messrs. Fuller's figures; but Mr. Abbott, Mr. Driver, and others being considerably below them, the jury returned a verdict for 4,400*l.*, being at the rate of nearly 22*l.* per foot, after allowing the tenant's interest in the lease.

Metropolitan Board of Works.—At the last weekly meeting of the Metroplitan Board of Works, Colonel Sir J. M. Hogg, M.P., in the chair, on the report of the finance committee complaint was expressed at the extravagance of professional charges in the Parliamentary, architectural, and engineering departments, and these high charges were said to be attributable to the heads of the different departments. The committee submitted a report by the solicitor explanatory of his reasons for recommending payment of the accounts of the counsel engaged before the committee of the House of Commons on the Metropolitan Buildings and Management Bill. Mr. Roche said, that after a careful examination of the fees of counsel, he believed that the fees paid to such eminent counsel by private persons would far exceed the amount they were asked to pass. The charge that such high fees was attributable to the chiefs of departments was entirely without foundation. This view was taken by several other members, and after some further remarks the report was adopted.

Public Analysts.—An influential meeting of public analysts from different parts of England has been held in the Cannon-street Hotel,—Professor Redwood in the chair. After the chairman had passed a few remarks on the objects of the analysts, and the motives for calling the meeting, the following among other resolutions was agreed to:—"That we analysts have carefully considered the report of the Select Committee of the House of Commons on the Adulteration Act, and are of opinion that it is desirable to take this report into joint consideration, and to suggest amendments in the present Act with a view to impending legislation next session." The proposed reference of disputed cases to Somerset House Laboratory, or to any body of persons whose decision is to be considered final, was objected to, as also compulsory examination of public analysts at South Kensington or elsewhere. Other resolutions were agreed to. A Society of Analysts is contemplated.

Mineral Oils for Lighthouses.— Captain Doty, whose exertions in endeavouring to induce the Trinity Corporation to substitute mineral oil for colza, with his burners, are well known, has printed a letter to the secretary of the Harbour Department of the Board of Trade on the subject, with a preliminary circular on the subject of the Trinity Corporation,—its scientific advisers, and the interests of maritime commerce. According to M. Reynaud, Inspector-General of Ports et Chaussées, and Conductor of the Lighthouse Service of France, the amount of light sent out upon the horizon by Captain Doty's burners with mineral oil in place of colza is increased 45 per cent. That the Trinity Corporation cannot see it does not by any means imply that it is not the fact. Every one knows that mineral oil is cheaper than colza; and much attention has been given to burners by more than one inventor of late years.

Mr. and Mrs. S. C. Hall.—In September next will occur the fiftieth wedding-day of those well-known writers, and last week a meeting of some of their friends was held to consider as to the best means of marking the event by some suitable testimonial. A preliminary committee was appointed, with power to add to their numbers, and it was resolved to invite subscriptions. Some of Mrs. Hall's books are known wherever the English language is spoken. Mr. Hall has edited the *Art Journal* for thirty-six years, with great advantage to the public, and together they have produced more than 200 volumes. Lord Shaftesbury, Mr. Theodore Martin, Col. Radcliffe, Mr. Durham, A.R.A., Mr. Cordy Jeffreson, Mr. Justin M'Carthy, Mr. Halswell, and many others have already expressed their willingness to assist, and Mr. F. Griffin, of No. 1, Kensington Palace Gardens, who has accepted the office of treasurer, will gladly receive additional names. We cordially wish success to the endeavour.

Margate.—The question of the water supply was commented upon by the mayor and others, at a meeting of the Council on Tuesday last, the general opinion being that the determination of the water company to cut off the supply from 10 p.m. to 5.30 a.m. was to be deplored, and it was resolved that the company should be written to upon the matter. The question of the construction of an aquarium by the Margate Aquarium Company again came up in the shape of a report from the Road and Building Committee, recommending the council to request the Board of Trade not to sanction the carrying out of the works until they knew whether they would interfere with the rights of the burgesses.

The Pictures in the Palace of Westminster.—In reply to Mr. Errington, Lord H. Lennox said that the efflorescence on the magnificent frescoes of Maclise of the meeting of Wellington and Blucher has unhappily spread over the whole face of the picture. More than a year ago Mr. Richmond stated that by a delicate treatment he could remove the efflorescence without injury to the rest of the picture. That opinion, however, was contradicted by other artists as eminent as Mr. Richmond, and the matter was allowed to drop. He would only ask the hon. member to call at the Royal Gallery, and he would see for himself most painfully that the efflorescence has not been removed. Since then it appears to have been done.

A Liverpool Music Hall Burnt Down. Last week a fire was discovered in the back part of Rogers's supper-rooms, Lime-street, Liverpool. A reel and several fire-engines were quickly on the spot, but owing to a stiff breeze blowing at the time, the flames quickly spread to the adjoining premises, which are used as the Oxford Music-hall. Great fear was entertained that the fire might extend to the extensive picture emporium of Messrs. Rosenberg on the one hand, and the premises of Messrs. Forrest, decorators, on the other. After an hour's steady working, however, the fire was got well under command, and restricted to the two blocks in which it had its origin, but these were thoroughly gutted. The Oxford, we believe, was advertised for sale; and uninsured.

Sale of the Alexandra Theatre.—The Alexandra Theatre, situated in Park-street, Camden-town, and which was built and opened not more that two years ago, has been sold by auction at the Mart, Tokenhouse-yard, by Messrs. Furber, Price, & Furber. The property is leasehold, held under three different leases, for an unexpired term of thirty-three years, at an annual ground-rental of 151*l.* The auctioneer, in introducing the property, referred to the large outlay which had only been recently incurred in the construction of the building, stating that it had cost upwards of 20,000*l.* The biddings commenced with an offer of 8,000*l.*, followed by another offer of 8,500*l.*, and they rapidly rose by advances of 500*l.* each bid until the property stood at 11,000*l.*, when the biddings slackened. The property was ultimately knocked down for 11,900*l.*

Building Accident.—On Monday Mr. Carter held an inquest at St. Thomas's Hospital on the body of William Vigars, aged twenty-seven, a carpenter, who was killed on Friday last by a mass of brickwork falling upon him at Sir Robert Burnett's new distillery, at Vauxhall. The deceased, and other men, were preparing to take away the struts from some arches, when the boards fell sideways, and one end striking the arch, knocked out some bricks, and five arches fell in, crushing the deceased to death, and more or less injuring the other workmen, two of them seriously. Deceased, it appeared, was in a hurry to get to some other work, and apparently was out of temper. Evidently he did not know anything about the way in which struts should be removed. A verdict of "Accidental death" was returned.

Macclesfield School of Art.—At the last meeting of the Town Council a letter received from Mr. Ford, Master of the School of Art, was read, in which Mr. Ford called attention to the fact that eighteen volumes of Indian designs were deposited in a small room in the Town Hall. They had been sent by the Government with the object of benefiting the textile industry of the town. Very few of the inhabitants, however, ever saw them. Mr. Ford suggested that if the designs were at the School of Art they would be of vast utility. He therefore asked the Mayor to grant the loan of a volume at a time for three or four weeks for the use of the school. He would himself be responsible for the volume so lent. The request was granted.

Sheerness.—A third edition of the "Guide to Sheerness-on-Sea and the Isle of Sheppy" has been issued. Sheerness, we believe, is one of the healthiest of English watering-places, but there appears to be a want of house accommodation of a somewhat better class than six-roomed cottages; and a better hotel is wanted. There is said to be a good field here for profitable investment in lodging-house property, and several other improvements are projected by the "Improvements Association" in the locality, especially a promenade pier and an esplanade.

Newcastle-upon-Tyne Improved Industrial Dwellings Company. — The fourth annual report of this company says that the profits for the year amount to 241*l.* 19s. 2d., and the directors recommend a dividend of 5 per cent. on the paid-up capital of the company. The building affords accommodation to forty-three families, and the annual rate of mortality during the past four years has not exceeded eight per 1,000, being little more than a fourth of the general death-rate of the town over the same period. The directors have had under consideration the desirability of extending their present block of buildings, but they feel, from the increased cost of construction, estimated at 30 per cent., they would not be justified in recommending any extension at present.

Whitby.—Sir George Elliot, bart., M.P., is expected to visit Whitby in September, and Messrs. Armfield & Bottomley, and Mr. E. H. Smales, architects, have prepared comprehensive plans for his approval, embodying his scheme of improvements on the West Cliff. The scheme comprises a carriage-road and sea-wall at the foot of the cliff, which will be a convenient drive and promenade for invalids, and also afford a good approach to the beach; subscription assembly-rooms, containing concert-hall, refreshment-rooms, &c.; open and covered promenades, rustic summer-houses, grottoes, and other sheltered places; and ornamental gardens and terraces, with flights of steps to the beach.

The School of Art, Royal Dublin Society. Mr. Robert Edwin Lyne, head master of the School of Art, Royal Dublin Society, evidently has grateful pupils. They have just now presented to him an address on the occasion of his having completed the tenth year of his labours amongst them, as head master of the school, expressing the high appreciation they entertain of the services which he has rendered to art education in Ireland, and of the many advantages which they have enjoyed as his pupils. They say in it:—"It is highly gratifying to us to have to recal the wide reputation which our art schools have achieved, and it must be a high satisfaction to you to remember that your efforts have so materially conduced to this result."

Wallasey Free Grammar School.—The Governors of this endowment for middle-class education, of which the scheme has lately received the sanction of Parliament, having decided to erect new schools to accommodate 200 boys, divided into seniors and juniors, invited plans from some of the leading architects of Liverpool. Seven responded to the invitation, and the plans have been on exhibition at the Board-room of the Wallasey Local Board. The Governors have selected those prepared by Mr. T. Mellard Reade, C.E., architect, of Liverpool, and have appointed him to carry out the work. Mr. Reade's plans are so arranged that they can be eventually extended to accommodate a total of 400 boys.

The Improvements at Blackfriars Bridge. By order of the City Corporation, Messrs. Mowlem, Burt, & Freeman have commenced some alterations and improvements on Blackfriars Bridge. It appears that the lamps along the bridge are placed on the extreme edge of the curb and channel. In consequence of this, the vibration caused by heavily-laden vehicles acts so powerfully as to completely loosen their hold. To obviate this state of things the present kerb and channel are being removed, and an additional foot's breadth added to the footway on both sides of the bridge. This, it is ascertained, will entirely prevent the recurrence of similar breakages in the future.

Dublin Tramways.—The half-yearly report of the Dublin Tramways Company states that the gross receipts from all sources amount to 31,078*l.* 18s. 2d., and after paying all working and other expenses there remains a net profit of 5,545*l.* 16s. 1d. Out of this it is proposed to pay a dividend at the rate of 4½ per cent. per annum, free of income-tax, being 4s. per share, and to carry the balance of 745*l.* 16s. 1d. to the reserve fund, which, with 39*l.* 11s. 8d., the interest on the fund for the past half-year, will then amount to 3,572*l.* 10s. 9d.

The Proposed Mortuary in Shoreditch.—The Vestry, on the recommendation of its Committee, has appointed Mr. Robert Walker to prepare a plan and estimate for a mortuary to be erected in the parish churchyard, the plan and estimate to be approved by the Vestry, and the design by the Vicar.

The Exeter Reredos.—Archdeacon Freeman, during the course of his sermon at Exeter on Sunday, made reference to the decision of Sir R. Phillimore in the case of the Exeter Cathedral reredos. The decision, he said, showed that Christian art may still be consecrated to the glory of God and the edification of man, and that the guardians of other fabrics throughout the land had not been guilty of idolatry when they set up in a reverent spirit sculptured memorials of glorious events such as the Transfiguration and Ascension of Christ.

White Lead.—Messrs. B. C. Molloy, of the Temple, and D. G. Fitzgerald, of Brixton, have patented some improvements in the manufacture of white lead. The essential features of this invention consist in the production of what is known as white lead, carbonate of lead, or basic carbonate of lead, by effecting the decomposition of chloride and of oxychloride of lead by means of an earthy carbonate, or by means of an earthy carbonate in conjunction with an alkaline earth, or the hydrate of the same.

The Throat and the Ear.—The Central London Throat and Ear Hospital is of such service to the poorer members of the musical and dramatic professions, that, in addition to the aid of Sir Michael Costa and Sir Julius Benedict, who were some time since elected vice-presidents, it has recently received the support of the Marquise de Caux (Madame Adelina Patti), and of Mdlle. Tietjens, both of whom have consented to be lady-patronesses. Since the hospital was opened in the spring, upwards of 1,000 patients have been treated.

Busts by Mr. Durham, A.R.A.—A memorial bust of the late Dr. John Murray, by Mr. J. Durham, has just been placed in the museum of Middlesex Hospital, the result of a subscription by medical friends. The same sculptor is also engaged upon a bust of the late Charles Knight, to be presented to the National Portrait Gallery by his grandson. Also one of the late Rev. J. Barlow for presentation to the Royal Institution by Mr. Justice Grove.

A Sewage Farm for Westbury-on-Trym, in the Clifton Union.—A meeting has been held in the vestry-hall at Westbury-on-Trym, at which a resolution approving of a sewage farm for Westbury was passed. The matter came before the meeting in the shape of a request from the rural sanitary authority of the Clifton Union, "that the county part of the parish of Westbury-on-Trym be consulted as to the disposal of the sewage."

The Peabody Museum at Yale, U.S.—The new Peabody Museum at Yale, United States, which is to replace the original building instituted by George Peabody, has been commenced. The museum will be unusually large—almost a college in itself—will be 350 ft. long and 130 ft. high in some parts, not including the towers, while the building is to be massive and thoroughly fireproof.

Monastery at Highgate.—At St. Joseph's Retreat, Highgate, a monastery to accommodate forty Passionist brethren is about to be erected. The building, of which Mr. Tasker, of Furnival's Inn, is the architect, will stand on the terrace, which is situated at a great elevation over London. The style of architecture will be Italian.

The Fire at the Liverpool Landing-stage.—It is understood that the Mersey Dock Board propose to hold the Liverpool Gas Company answerable for the destruction of the landing-stage, on the ground that the calamity arose from the carelessness of their workmen in permitting the gas to escape from the main pipe, while using a naked light for soldering.

Carlisle Cathedral.—Workmen are at present engaged in completing the reredos in Carlisle Cathedral by continuing the screens forward on each side to the width of one arch. These screens, of white stone enriched by grey marble mouldings and red marble pillars, consist of arcades similar in design to the screens at each end of the communion-table.

Bursting of a Reservoir.—The embankment of a reservoir in course of erection on Kilbride Hills, for the water supply of Duncon, was burst by the overflow of Balgay Burn. Five thousand cubic yards of material and a quantity of plant were swept away. The loss to the contractors, Messrs. Baird, of Dundee, will be very heavy.

Restriction of the Manchester Water Supply.—In consequence of the drought, no water will be supplied at Manchester until further notice between six at night and six in the morning. Manchester is one of the towns which, under ordinary circumstances, has the benefit of constant supply.

Wood-working Machinery.—Messrs. Reynolds & Co. have received a silver medal at the Preston show for their imperial saw-bench and mortising machines. They have just now completed an order for the Indian Government.

TENDERS

For shops and offices, Queen Victoria-street. Mr. Lewis Solomon, architect. Quantities supplied by Mr. Henry F. Gritten:—

Hill, Higgs, & Hill	£6,400 0 0
Oliver	6,348 0 0
Browne & Robinson	6,279 0 0
Newman & Mann	6,236 0 0
Carter	6,099 0 0
Stimpson	6,080 0 0
Longmire & Burge	5,889 0 0
Elkington (accepted)	5,600 0 0
Bracher & Son*	4,590 0 0

* Clerical error for £5,590.

For new premises of the Hearts of Oak Society. Mr. T. Chatfeild Clarke, architect:—

Ashby & Sons	£5,834 0 0
Colls & Sons	5,828 0 0
J. & F. Coleman	5,814 0 0
Conder	5,780 0 0
Browne & Robinson	5,750 0 0
Scrivener & White	5,669 0 0
Newman & Mann	5,632 0 0
Macey	5,500 0 0
Patman & Fetheringham	5,370 0 0
Merritt & Ashby	5,330 0 0
Samuel Simpson	5,089 0 0

For residence for Mr. F. Stallard, Lewisham Hill. Mr. William Oakley, architect. Quantities supplied by Mr. Sidney Young:—

Crossley	£4,469 0 0
Brass	4,349 0 0
Sewell & Son	4,279 0 0
Colls & Sons	4,232 0 0
Newman & Mann	4,226 0 0
Bayes & Ramage	4,184 0 0
G. B. & W. T. Gates	4,149 0 0

For new Infectious Hospital at the Milton Union Workhouse, next Sittingbourne. Mr. Benjamin Adkins, architect. Quantities supplied:—

Oxley	£2,904 0 0
Ratcliffe	2,835 16 4½
Dover, Son, & Co.	2,545 0 0
Waterson & Co.	2,400 0 0
Shrubsole	2,269 0 0
Adcock & Rull	2,244 0 0
Naylar	2,193 0 0
Cornelius	2,148 5 0
Callund	2,140 0 0
Whiting Bros.	2,136 0 0
Sollitt (accepted)	2,051 0 0

For the erection of a house and stable, at West-hill, Wandsworth. Messrs. Lee, Bros., & Pain, architects. Quantities supplied:—

Adamson & Sons	£3,497 0 0
Townsend	3,489 0 0
Parsons	3,475 0 0
Roberts	3,458 0 0

For repairs to No. 50, Bedford-square. Mr. Lewis Solomon, architect:—

Palmer	£565 0 0
Willson	498 0 0
Cohen	390 0 0
Woods (accepted)	295 0 0

For Centenary Hall, Workmen's Dwellings, &c., Bethnal Green. Messrs. Habershon & Pite, architects:—

	Hall.	Club.	Dwellings.
Allen & Son	£1,000	£810	£1,000
Saby & Son	1,024	889	1,069
Roberts	1,046	838	1,069
Morgan	1,879	804	1,039
Woodward	1,870	795	1,054
Martin	1,875	835	1,007
Shurmur	1,845	799	1,018
Jerrard	1,824	788	1,036
Bangs & Co.	1,845	770	1,027
Ennor	1,823	768	1,095
Niblett & Son	1,797	757	995
Boden	1,775	785	987
Webber	1,730	758	982
Leatherdale & Son	1,661	737	979
Hunt	1,659	726	908
Smale	1,635	702	909
Chivers	1,600	660	940
Stamps & Bowtle	1,611	667	909
Waldron & Co.	1,577	583	967
High	1,520	500	929

For Christ Church, Freshwater, Isle of Wight. Messrs. Habershon & Pite, architects:—

Coker	£1,831 0 0
Bound	1,639 0 0
Newman & Son	1,515 0 0
Parsons	1,489 0 0
Barnes	1,472 0 0
Smith	1,370 0 0
Barkitt	1,365 0 0

For alterations and additions to St. George's Church, Battersea. Mr. Henry Stone, architect. Quantities supplied:—

Macey	£1,940 0 0
Dove, Brothers	1,875 0 0
Gregory	1,763 0 0
Lathey, Brothers	1,730 0 0

For the erection of six cottages, at Kelmarsh, Northampton, for Mr. R. C. Naylor. Mr. J. K. Colling, architect. The proprietor finding bricks:—

Cornish	£1,153 0 0
Watkin & Son	700 0 0
Haycock	639 0 0
Peach (accepted)	498 0 0

For St. Mark's Schools, West Hackney. Mr. E. L. Blackburne, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Hill, Higgs, & Hill	£3,660 0 0
Waldram & Co.	3,178 0 0
Conder	3,175 0 0
Brass	3,158 0 0
Sergeant	3,149 0 0
Manley & Rogers	2,885 0 0
High	2,645 0 0

For additions to 39, Berkeley-square. Mr. M. P Manning, architect. Quantities supplied by Mr. D. J. Brown:—

Waldram & Co.	£2,515 0 0
Rowlands	2,500 0 0
Mann	2,287 0 0
Pope	2,180 0 0
Patrick	1,968 0 0
Colls & Son	1,944 0 0
Temple & Foster	1,720 0 0

For coachhouse, stables, &c., at Stoke Newington, for Mr. J. M. Dean. Mr. Wm. Reddall, architect. Quantities supplied:—

Patman	£790 0 0
Browne & Robinson	765 0 0
Waldram & Co.	718 0 0

For a new church and parsonage for the newly-formed parish of Whitington, Norfolk. Mr. R. M. Phipson, architect:—

Hubbard	£3,548 0 0
Farrow	3,350 0 0
Bardell, Brothers (accepted)	2,950 0 0

For a new roof to the nave of Elmham St. James's Church, Suffolk. Mr. R. M. Phipson, architect:—

Ludkin (accepted)	£364 3 0

For alterations and additions to Elmham St. Cross Rectory, Suffolk. Mr. R. M. Phipson, architect:—

Grimwood	£1,110 0 0
Moore & Dalliston (accepted)	1,101 0 0

For new Petty Sessions House, Docking, Norfolk. Mr. R. M. Phipson, architect:—

Skipper	£340 0 0
Nelson	345 0 0

For additions and alterations to "The Mount," Bromsgrove, for Mr. Wm. Green. Mr. John Cotton, architect. Quantities supplied:—

Steel	£1,950 0 0
Wood & Sons	1,797 0 0
Matthews & Son	1,765 0 0
Foster	1,640 0 0
Hardwick & Son	1,635 0 0
Brooks	1,583 0 0
Harris & Fisher	1,529 0 0
Brasier & Weaver	1,525 0 0
Read	1,500 0 0
Walford (accepted)	1,453 0 0

For erection of a campanile, or bell-tower, to the parish church of Cradley, near Stourbridge. Mr. John Cotton, architect:—

Bloomer	£1,484 0 0
Nelson (accepted)	1,340 0 0

For new Catholic Church at Warrington. Mr. E. Welby Pugin, architect. For nave and aisles only, and exclusive of foundations. Quantities supplied:—

Mullins	£10,440 0 0
Thompson	10,330 0 0
Haigh & Co.	9,661 0 0
Parnell & Son	9,262 0 0
Breen	8,800 0 0
Middlehurst	8,750 0 0
Yates (accepted, together with tender for chancel)	8,415 0 0
Watkins	8,240 0 0
Wilson	8,204 0 0
Yates (for chancel and side chapel, accepted)	1,700 0 0

For new Catholic Church at Rock Ferry. Mr. E. Welby Pugin, architect. Quantities supplied:—

Hobson	£8,400 0 0
Parnell & Son	8,100 0 0
Yates	8,000 0 0
Mullins	7,868 0 0
Haigh & Co.	7,300 0 0
Carpenter	7,200 0 0

For stabling and conservatory, Quarrington House, Forest Hill. Mr. A. G. Hennell, architect:—

Downs & Co.	£945 0 0
Amer	870 0 0
Masters	850 0 0
Williams & Son (accepted)	839 0 0

For new probationary ward at the North Surrey District Schools, Anerley. Mr. A. G. Hennell, architect:—

Downs & Co.	£3,300 0 0

For formation of roads, &c., for laying out the first portion of the ground belonging to the Crystal Palace District Cemetery Co., at Penge. Mr. A. G. Hennell, architect:—

		If burnt clay ballast instead of chalk.
Meston	£2,690 0 0	... £2,474 0 0
Potter	2,350 0 0	... 2,170 0 0
Pizzey	2,235 0 0	... 2,175 0 0
Carter	1,970 15 0	... 1,787 10 0
Woodham, Bros. (accepted)	1,790 0 0	... 1,690 0 0

For new Catholic Schools, St. Ann's, Stretford. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Southern	£925 0 0
Herd	787 0 0
Cain	770 0 0
Ward (accepted)	700 0 0

For new Catholic Schools at Sandhurst. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. R. O. Harris:—

Carran (accepted)	£594 0 0

For alterations and painting to St. John's Church, Horselydown, S.E. Messrs. Newman & Billings, architects:—

Phillips	£548 0 0
Stevens	470 0 0
Brighton	465 0 0
Pitman & Cuthbertson (accepted)	444 0 0

For works at the New Patent Safety Pantechnicon, King's-road, Chelsea. Taylor, Milsted, & Clark's patent.* Messrs. Pain & Clark, architects:—

	First contract.	Credit.
Cooke & Green	£5,479	£150
Stimpson & Co.	4,976	150
Kelly, Bros.	5,200	500
Manley & Rogers	4,908	350
Oliver	4,812	350

* The system above termed Taylor, Milsted, & Clark's patent, is one of iron hollow girders and concrete arches, the girders and joists arranged throughout so as to form, according to the magnitude of the building, series of hot-water circulating apparatus, any number of which may be used for warming purposes. The arrangement of these joists is said to be such, that in case of fire at any part of the premises, the circulation of the adjacent system must remain complete, and render the melting of the joists impossible. The joists, or water system, also is made the means for service to hydrants at frequent intervals. The staircases and lifts are exterior to the building.

For building a school for infants and girls, in the parish of St. Andrew, Hereford, for the Committee. Messrs. Wm. Wilds & Son, architects. Quantities supplied:—

Norris	£815 17 0
Ekins & Son (accepted)	709 0 0
Fisher	677 0 0

For building a pair of cottages and a Cottagers' Reading-room, for Mr. E. Potter, Camfield-place. Messrs. W. Wilds & Son, architects. Quantities supplied:—

Gregory	£1,095 0 0
Ekins & Son	1,000 0 0
Bint & Son	870 10 0
Chapman	860 0 0
Collins (accepted)	745 10 0

For premises in Long Acre, for Mr. E. Stanford. Mr. G. Barnes Williams, architect. Quantities by Mr. J. C. Lansdown:—

Ebbage	£3,095 0 0
Turner & Sons	2,999 0 0
Conder	2,945 0 0
Clemence	2,942 0 0
Taylor	2,935 0 0
Howard	2,843 0 0

Clergy House at Dalston.—A duplicate list sent us last week omitted the name of the firm whose tender was lowest,—Messrs. Waldram & Co., of Kingsland-road. We must solicit carefulness on the part of correspondents.

Alterations in Rathbone-place.—We have received two letters from Messrs. Colls, the first saying they had sent no tender for these works, the second that the amount of their tender should have been printed 5,828*l.* instead of 6,828*l.* We printed the list precisely as it came to us.

TO CORRESPONDENTS.

"Waste, Storage, and Supply of Water," unavoidably postponed.

A. B. (Illustrations of two or three cottage hospitals will be found in our pages).—Z. (we do not publish anonymous abuse).—R. C. (Mr. Francis Goodwin built the Manchester Town-hall, and other structures, and is no relation to the conductor of this journal).—E. A. (please let us see sketches).—E. A.—F. W.—A. W. M.—T. P.—O. R.—Messrs. C.—E. B. F.—A. J.—H. L. W.—W. H. P.—F. G.—P. & C.—J. R.—W. & Son.—G. A.—W. L.—W. & Co.—R. L.—K.—T. G.—G. L.—A. B.—J. G.—E. B.—J. T. M.—Ignoramus.—J. C.—A. H.—P. C.—T. S. W.—M. W.—B. D.—C. D.—J. L.—B. H. L.—G. & B.—H. P.—J. H.—I. & B.—W. F. P.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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